GOUR MAHAVIDYALAYA

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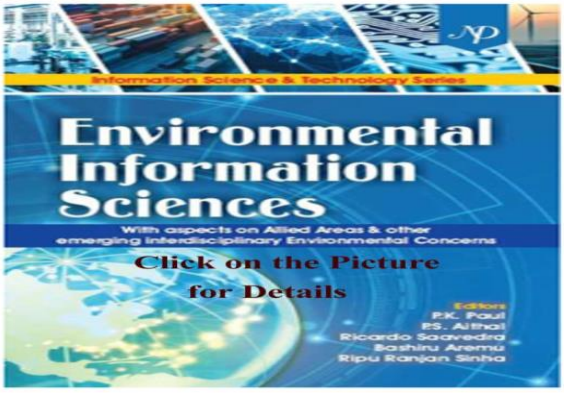

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Green Computing Techniques: A Mover of Environmental Solutions

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ABSTRACT
Today computer's process power grows quickly thus we have Cloud computing thought to meet this want. But, in Cloud computing high performance cloud servers are used for advance process wants. Because of these process unit executions, an outsized quantity of power consumed, on the opposite hand the result is that some harmful gases also are free in an exceedingly similar quantity of energy. Inexperienced Computing is that the thought that is attempting to confine this procedure by inventing new ways that will work with efficiency whereas overwhelming less energy and creating less population. This paper focuses on inexperienced computing techniques, so as to attain low power consumptions.

Keywords: Green Computing, Data Center, Virtualization

1. INTRODUCTION

Cloud computing refers to because the delivery of computing resources over the web rather than keeping information on your own disk drive or change applications for your desires, you employ a service over the web, at another location, to store your data or use its applications. Cloud computing consist hierarchy of ideas, that includes many models. The primary model is that the Service Model [1] that additional includes 3 models particularly – code as a service, platform as a service and infrastructure as a service. Second is that

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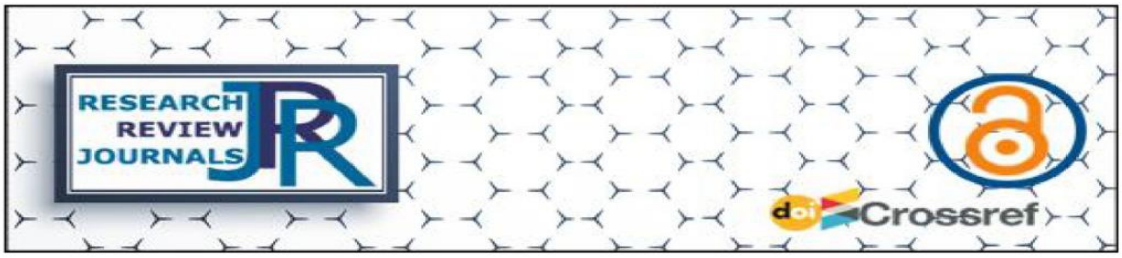

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A Study on Ad-Hoc-Data Processing in Cloud Computing Process

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Ad-hoc, Cloud computing, Cloud services

ABSTRACT

The most significant point of cloud computing is that the resources and data are accumulated into data centers on the internet. These days, the cloud services like IaaS, PaaS & SaaS, have been improved in execution as application execution environments are aggregated at several levels for sharing.

1. Introduction

The ad-hoc data is stored in cash registers. Then, this stored data is analyzed with the help of the time-series. Hence, the behavior like purchasing behavior of individuals is analyzed from this ad-hocdata. According to a report, about 7 million pieces per second are accumulated at cloud centers.

This ad-hoc data is not equivalent to that is obtained in reality because of the fact that much of the data is lost while moving to the cloud centers. Many research are going on in order to reduce this data leakage.

In today's world, several kinds of data are accumulated in a cloud environment as the cost of devices of information and communication technology is decreasing day by day. There is an urgent need to analyze this massive data so that it can be helpful for the business and society.

A new technology needs to be adapted as the quantity of data is so massive which is far more than tens of terabytes or tens of petabytes. Also, these days, social infra structure services run for 24 hours and 7 days a week. Hence, there is an urgent need to change the configuration of system dynamically.

Many laboratories are developing fundamental technologies for processing ad-hoc data in a cloud environment. A new methodology has been introduced to create cloud by aggregating data. So now there is a need to change the role of cloud from application aggregation to ad-hoc data aggregation and utilization. A new technology other than information and communication technology is needed to use this kind of ad-hoc data which is of more than tens of petabytes.

Now, the scenario of cloud environment has expanded from information & communication technology applications to business processes to innovation. The aim is to increase sales by identifying valuable information via data analysis aggregated into clouds.

The most significant point of cloud computing is that the resources and data are accumulated into data centers on the internet. These days, the cloud services like IaaS, PaaS & SaaS, have been improved in execution as application execution environments are aggregated at several levels for sharing.

Ad-hoc data processing is a powerful abstraction for mining terabytes of data. Systems for massive parallel data processing, such as MapReduce and Dryad allow Internet companies, e.g., Google, Yahoo, and Microsoft, to mine large web crawls, click streams, and system logs across shared-nothing clusters of unreliable servers.

The biggest feature of innovation is that the users don't know what to do which differentiates it from traditional ICT application. There are many methods to analyze ad-hoc data. The process of data analysis must be repeated a number of times from several prospective. Also, a processing having high speed and low cost is needed in all stages of development and operation.

2. Review of related literature

Jain et al. 2012 proposed a method,Pregel, which is used to implement a programming model. In this model, each node has its own input and transfers only some messages which are needed for the next iteration to other nodes.

R. Vernica et al. 2014 proposed a 3-stage approach for end-to-end set-similarity joins. They efficiently partition the data across nodes in order to balance the workload and minimize the need for replication. Wei Lu et al. investigate how to perform kNN join using MapReduce. Mappers cluster objects into groups, then Reducers perform the kNN join on each group of objects separately. To reduce shuffling and computational costs, they design an effective mapping mechanism that exploits pruning rules for distance filtering. In addition, two approximate algorithms minimize the number of replicas to reduce the shuffling cost.

J. Ekanatake et al. 2012 proposed a method,Twister, which is an incremented MapReduce runtime which supports

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Predicting wetland area and water depth of Ganges moribund deltaic parts of India

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ARTICLE INFO

Keywords:
Wetland area simulation
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ABSTRACT

Wetland area and depth of wetland in the moribund Ganges delta of India is simulated and predicted up to 2037. Normalized Difference Water Index (NDWI) map from 1987 to 2017 is used for predicting the same. Artificial Neural Network (ANN) based Cellular Automata (CA) simulation is used to predict wetland area and exponential adaptive smoothing and least square regression are used to predict wetland depth. The result shows 17–18% of wetland area may lose their existence in the upcoming two decades. Water depth of large wetlands area is likely to be reduced by 45–50% in both seasons and small fragmented marginal wetlands are going to be dried out in the next twenty years. Large wetland and wetland core area is safer than smaller and fringe wetland. Considering the socio-ecological importance policy should be taken and the result could help to define plan sustainably.

1. Introduction

Wetland is considered to be as the most valuable dynamic bio-physical resource. Wetland serves many important functions like natural flow control, surface flow maintenance and water retention, and sediment retention (Watson et al., 2016; Yu et al., 2015). Wetland also provides some essential ecological, economic and social commodities like freshwater, fisheries, tourism and potential hub of many wildlife resources (Asomani-Boateng, 2019; Sutton-Grier and Sandifer, 2018), but continuous human interference to the wetland area by converting the wetlands into agriculture land or built-up land is a major threat for wetland ecology and its habitat (Fang et al., 2019; Saha and Pal, 2018; Mandal, 2017; Zhang et al., 2015). Ramsar Convention on Wetlands (2018) reported that world wetlands are degraded and destroyed faster than any other natural ecosystems and also reported that 35% of world's wetlands are rapidly disappeared in between 1970 and 2015, with continuous annual accelerating rate since 2000 (Robelo et al., 2018). Inland wetlands such as peat lands, marshes, swamps and floodplain wetlands are declining over the time (Rebelo et al., 2018; Davidson and Finlayson, 2018). Ramsar Convention on Wetlands (2018) also reported that 25% of global plant and animals are standing at the door of extinction. In India, 2–3% of wetland disappearing every year and this rate has been increasing at a constant pace (Space Application Centre, 2011; Prasher, 2018). Chen et al. (2018) reported that seasonal wetlands are more vulnerable than the permanent wetlands, 24.6% of the wetland area is affected due to seasonal change (Murthy et al., 2013). Indian wetlands also experience immense anthropogenic pressure especially in the floodplain regions (Bassi et al., 2014) mainly due to agriculture and built up extension (Saha and Pal, 2018).

The present study is concentrated on the wetlands of the moribund region of Ganga-Padma delta which covers the entire part of the Nadia district. According to Bala and Mukherjee (2010), there are 75 major wetlands in this region with the area more than 2.25 ha which covers 1% geographical area of this region. Also, there are numerous small seasonal wetlands in this region with immense hydro-ecological importance but those wetlands are neglected due to its seasonal nature (Paul and Pal, 2019; Deane et al., 2017; Li and Wang, 2015). Many wetlands of this region concentrated near the floodplain areas and it has a major impact on the ecology and regional economy of this region. But encroachment towards wetland and reclamation of such precious wetland resources requires attention, continuous observation and exploratory research for conservation (Paul and Pal, 2019; Islam, 2016). Many scholars and researchers several times carried out researches on floodplain wetlands by delineating, mapping and monitoring of the wetland area (Powell et al., 2019; Mondal and Pal, 2016; Rebelo et al., 2018; Zheng et al., 2017). Those works have mainly captured the dynamic nature of the wetlands but rarely worked for prediction of area, and depth as a parameter is overlooked in most of the cases. But when we work with water

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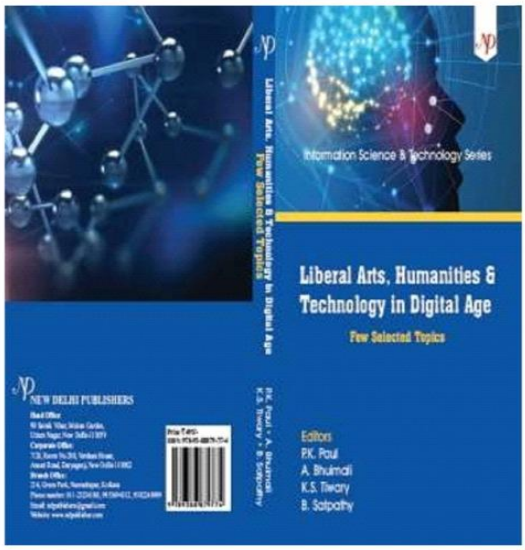

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A case study on Cloud Computing Infrastructure

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Abstract

The command over Cloud Computing infrastructure is increasing with the growing demands of IT infrastructure during the changed business scenario of the 21st Century. The various constraints and limitations such as server capacity, storage, bandwidth and power, pose real-time challenges on datacenters. The expansion of conventional infrastructure as per the growing demands faces a real-time constraint primarily to many inconvenience and inflexibilities. These complexities drive towards various issues like costing, deployment of threats and various risks pertaining to the operation. Organizations based or operations on large scale IT infrastructure have to face these challenges accompanying in near future. Henceforth, for cost effectiveness and economy solutions, there is an enormous migration towards the Cloud infrastructure. Therefore, the public cloud service providers need to evolve and develop their infrastructure to meet the challenges of the increasing demands in the IT dependent society.

Keywords: *Cloud computing, Architecture, datacenters, IT infrastructure, conventional infrastructure.*

1. Introduction

Cloud computing is the model for enabling convenient, on-demand network access to a shared pool of configurable computing resources like networks, servers, storage, applications, and services, that can be rapidly provisioned and released with minimum management effort or service provider interaction [1].

Recently, cloud computing as a new kind of advanced technology stimulates the modernization for the computer industry. Cloud computing is a computing model based on networks, specially based on the Internet, whose task is to ensure that users can simply use the computing resources on demand with paying money according

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Exploring wetland transformations in moribund deltaic parts of India

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ABSTRACT

Moribund deltaic part of Ganga–Padma region possesses hydro-ecologically precious dynamic wetlands of different kinds. The present paper endeavours to map, monitor wetlands and assess the changing hydro-ecological states of these in the moribund deltaic plain. Multi-temporal Landsat images since 1987–2016 are used for mapping and monitoring the wetlands. Normalized Difference Water Index (NDWI), Water Presence Frequency (WPF) approaches are applied for time series water body extraction and integration of water body maps for making frequency continuum of wetlands. The fragmentation analysis is done to show the transformation pattern of wetland landscape. Total wetland areas are 46.66 and 88.55 km^2 in pre- and postmonsoon seasons respectively. Out of the total wetlands area of pre and postmonsoon seasons 18.21 km^2 (54.09%), 35.83 km^2 (62.14%) areas respectively have witnessed transformation from phase I (1987–1996) to phase III (2006–2016). The Fragmentation statistics shows that 35% of medium and large core wetlands have been changed into smaller one and numerous small wetlands have been lost. Different landscape ecological indices like Shannon's diversity index (SHDI) and Simpson's diversity index (SIDI) depict disaggregated pattern of wetlands. Maintenance of ecologically relevant channel flow and inundation is highly essential for minimizing transformation.

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KEYWORDS
Moribund delta; Normalized Differential Water Index (NDWI); water presence frequency (WPF); wetlands fragmentation and transformation

1. Introduction

Wetland is one of the widely and dynamically depleting valuable limited natural resources of the world and conservation of it; monitoring, sustainable uses are highly obligatory (Zhang et al. 2015). Wetlands perform multi-dimensional ecosystem functions such as cleaning of pollutant from water, recharging groundwater aquifers, buffering intensive flood, controlling drought severity, mediating climatic extremity and livelihood support of the stakeholders (Patial et al. 2015; Xie et al. 2015). The floodplains are also one of the most valuable and productive land cover in terms of biodiversity, ecological productivity and ecosystem service, yet it is continuously altered and transformed into other land uses specifically agriculture land (Costanza et al. 2014; Guida et al. 2015). In floodplain areas wetlands support very rich variety of biotic communities such as planktons, periphytons, macrophytes, insects, fishes and other economically valuable flora and fauna (Huang et al.

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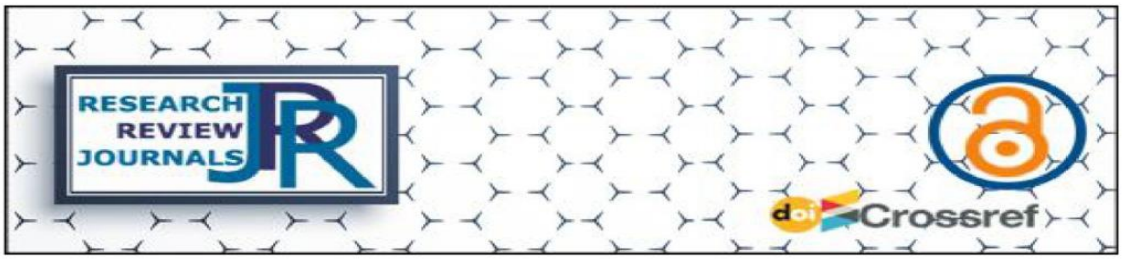

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A Study on Cloud Computing Infrastructure

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Keywords
Cloud computing, Architecture, Data

ABSTRACT

The command over cloud computing infrastructure is increasing with the growing demands of IT infrastructure during the changed business scenario of the 21st Century. The various constraints and limitations such as server capacity, storage, bandwidth and power, pose real-time challenges on datacenters. The expansion of conventional infrastructure as per the growing demand faces a real time constraint primarily to many inconvenience and inflexibilities. These complexities drive towards various issues like costing, deployment threats and various risk pertaining to the operation.
Organizations based or operations on large scale IT infrastructure have to face these challenges accompanying in near future. Henceforth, for cost effectiveness and economy solutions, there is an enormous migration towards the cloud infrastructure. Therefore, the public cloud service providers need to evolve and develop their infrastructure to meet the challenges of the increasing demand in the IT dependent society.

1. Introduction

Cloud computing is not only limited to virtualization of datacenter. It was miss conceptualized because, being in the era of cloud computing, the virtualizations of datacenters were adopted to reduce the cost. Further, at various level of resource provisioning, virtualized management technology has been evolved to adapt the larger dynamic resource allocations. This further reduced costs; but also increased the datacenter flexibility and performance, ushering in a new era of optimization technology for enterprise and public clouds based upon virtualization. Cloud computing offers the possible gateways to reduce the cost and drain resources. Also creates a new organizational requirement where various teams will be responsible for networking, computation as well as storage.

Energy efficiency and low carbon strategies have attracted a lot of concern. The goal for 20% energy efficiency and carbon reduction by 2020 drove the Information Communication Technologies (ICT) sector to strategies that incorporate modern designs for a low carbon and sustainable growth. The ICT sector is part of the2020 goal and participates in three different ways. In the direct way, ICT are called to reduce their own energy demands (green networks, green IT), in the indirect way ICT are used for carbon displacements and in the systematic way ICT collaborate with other sectors of the economy to provide energy efficiency (smart-grids, smart buildings, intelligent transportations systems, etc.). ICT and in particular datacenters have a strong impact to the global CO_2 emissions. Moreover, an important part of the operational expenditure is due to the electricity demands.

The demand for high speed data transfer and storage capacity together with the increasingly growth of broadband subscribers and services will drive the green technologies to be of vital importance for the telecommunication industry, in the near future. Already, recent research and technological papers show that energy efficiency is an important issue for the future networks. A review of energy efficient technologies for wireless and wired networks is presented by Brown et al (2007). The design of energy efficient WDM (*Wavelength Division Multiplexing*) ring networks is highlighted. It is shown that energy efficiency can be achieved by increasing the capital expenditure of the network, by reducing the complexity and by utilizing management schemes. The case of thin client solutions is investigated and it is shown that employing power states in the operation of a datacenter can yield energy efficiency. Efforts have been cited related to agreeing and enabling standard efficiency metric, real time measurement systems, modeling energy efficiency, suggesting optimal designs, incorporating renewable energy sources in the datacenter and developing sophisticated algorithms for designing and managing the datacenters. These approaches have been published by various companies, experts in the field and organizations. Although the IT industry has begun "greening" major corporate datacenters, most of the cyber infrastructure on a university campus or SMEs of suboptimal energy environment and ad hoc involves a complex network, in small departmental facilities placed with clusters.

2. Objectives of the Research

The focus of this research work is to analyze the various power issues on the core cloud computing infrastructure along with network and storage model with provisioning parameters for optimization of resource allocation by the cloud. The main objective of this research work is discussed as below:

1. To conduct a survey about the various energy issues of the large scale cloud computing architecture.
2. Conduct the trade-off analysis using the parameters for estimation of *Service Level Agreement* (SLA) violations; cloud estimation in heterogeneous *Dynamic Voltage Frequency Scaling* (DVFS) enabled data-center for better visualization of theproposed analysis.

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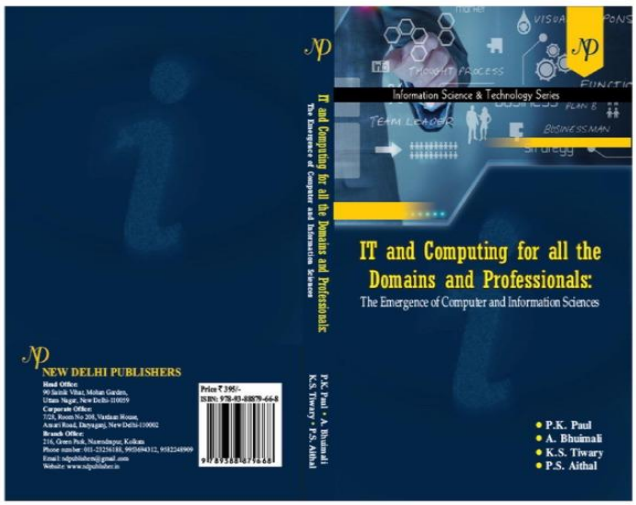

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Library automation using Cloud computing technology: An overview

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Abstract

Technology is changing quickly and is establishing a layer that affecting each and every ingredient of life like power grids, traffic control, medical and health care, food and energy, books and journals and all the financial transaction of our real life. Cloud computing is not an exception for changing the world. Cloud computing provides us essentially unbounded and ont demand computing resources. The infrastructure of cloud computing is such, that it encourages the development of innovation in every field. One such application of cloud is in library. Libraries and information centers are in problemto carry on pace with the growing call for improved and enhanced forms of information resources. Cloud computing is the stepping stone to Lancaster's forecasted "Paperless Society". Cloud computing allows the library to provide IT infrastructure on a subscription model and to scale its technological resources. With cloud computing, library services can have a new hop in future and it would become more effective, user-centric, sophisticated and more professional. It helps to move towards IT world and Library Greener. Some Library softwares are Insignia Library System, by Insignia Software, Koha ILS, by LibLime, LIBSYS7, by LIBSYS etc.

Keywords: Cloud computing, Cloud Architecture, on-demand computing, Paperless Society, IT infrastructure, Library automation.

1. Introduction

Today, libraries are using cloud computing technology for upgrading the services by adding more values, attracting the users and cost effectiveness for much more improvement. The concept of cloud computing with libraries has generated a new model called cloud libraries. Though the uses of cloud computing may vary with the library's nature, services and information needs but most common use of cloud computing with in libraries can be development of digital library, corporate looking cataloging, acquisition, storages

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Predicting wetland area and water depth of Ganges moribund deltaic parts of India

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Keywords:
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ABSTRACT

Wetland area and depth of wetland in the moribund Ganges delta of India is simulated and predicted up to 2037. Normalized Difference Water Index (NDWI) map from 1987 to 2017 is used for predicting the same. Artificial Neural Network (ANN) based Cellular Automata (CA) simulation is used to predict wetland area and exponential adaptive smoothing and least square regression are used to predict wetland depth. The result shows 17–18% of wetland area may lose their existence in the upcoming two decades. Water depth of large wetlands area is likely to be reduced by 45–50% in both seasons and small fragmented marginal wetlands are going to be dried out in the next twenty years. Large wetland and wetland core area is safer than smaller and fringe wetland. Considering the socio-ecological importance policy should be taken and the result could help to define plan sustainably.

1. Introduction

Wetland is considered to be as the most valuable dynamic biophysical resource. Wetland serves many important functions like natural flow control, surface flow maintenance and water retention, and sediment retention (Watson et al., 2016; Yu et al., 2015). Wetland also provides some essential ecological, economic and social commodities like freshwater, fisheries, tourism and potential hub of many wildlife resources (Asomani-Boateng, 2019; Sutton-Grier and Sandifer, 2018), but continuous human interference to the wetland area by converting the wetlands into agriculture land or built-up land is a major threat for wetland ecology and its habitat (Fang et al., 2019; Saha and Pal, 2018; Mandal, 2017; Zhang et al., 2015). Ramsar Convention on Wetlands (2018) reported that world wetlands are degraded and destroyed faster than any other natural ecosystems and also reported that 35% of world's wetlands are rapidly disappeared in between 1970 and 2015, with continuous annual accelerating rate since 2000 (Robelo et al., 2018). Inland wetlands such as peat lands, marshes, swamps and floodplain wetlands are declining over the time (Rebelo et al., 2018; Davidson and Finlayson, 2018). Ramsar Convention on Wetlands (2018) also reported that 25% of global plant and animals are standing at the door of extinction. In India, 2–3% of wetland disappearing every year and this rate has been increasing at a constant pace (Space Application Centre, 2011; Prasher, 2018). Chen et al. (2018) reported that seasonal wetlands are more vulnerable than the permanent wetlands, 24.6% of the wetland area is affected due to seasonal change (Murthy et al., 2013). Indian wetlands also experience immense anthropogenic pressure especially in the floodplain regions (Bassi et al., 2014) mainly due to agriculture and built up extension (Saha and Pal, 2018).

The present study is concentrated on the wetlands of the moribund region of Ganga-Padma delta which covers the entire part of the Nadia district. According to Bala and Mukherjee (2010), there are 75 major wetlands in this region with the area more than 2.25 ha which covers 1% geographical area of this region. Also, there are numerous small seasonal wetlands in this region with immense hydro-ecological importance but those wetlands are neglected due to its seasonal nature (Paul and Pal, 2019; Deane et al., 2017; Li and Wang, 2015). Many wetlands of this region concentrated near the floodplain areas and it has a major impact on the ecology and regional economy of this region. But encroachment towards wetland and reclamation of such precious wetland resources requires attention, continuous observation and exploratory research for conservation (Paul and Pal, 2019; Islam, 2016). Many scholars and researchers several times carried out researches on floodplain wetlands by delineating, mapping and monitoring of the wetland area (Powell et al., 2019; Mondal and Pal, 2016; Rebelo et al., 2018; Zheng et al., 2017). Those works have mainly captured the dynamic nature of the wetlands but rarely worked for prediction of area, and depth as a parameter is overlooked in most of the cases. But when we work with water

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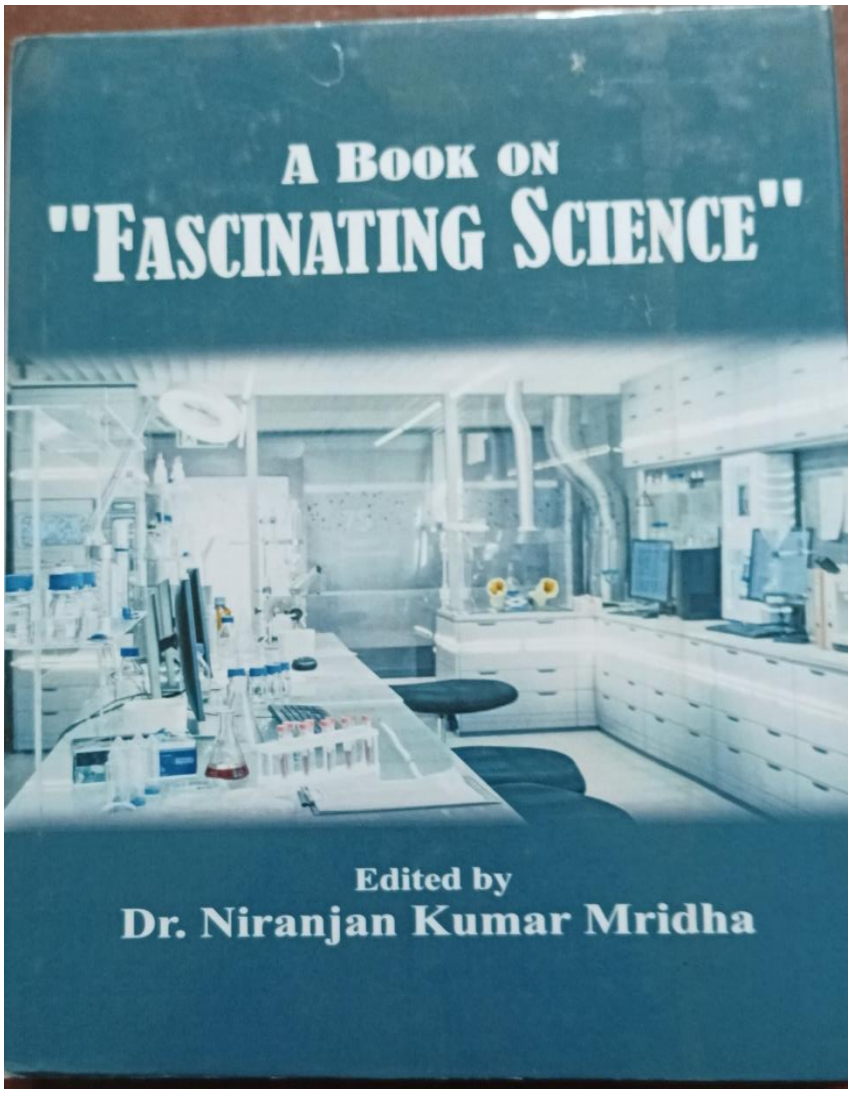

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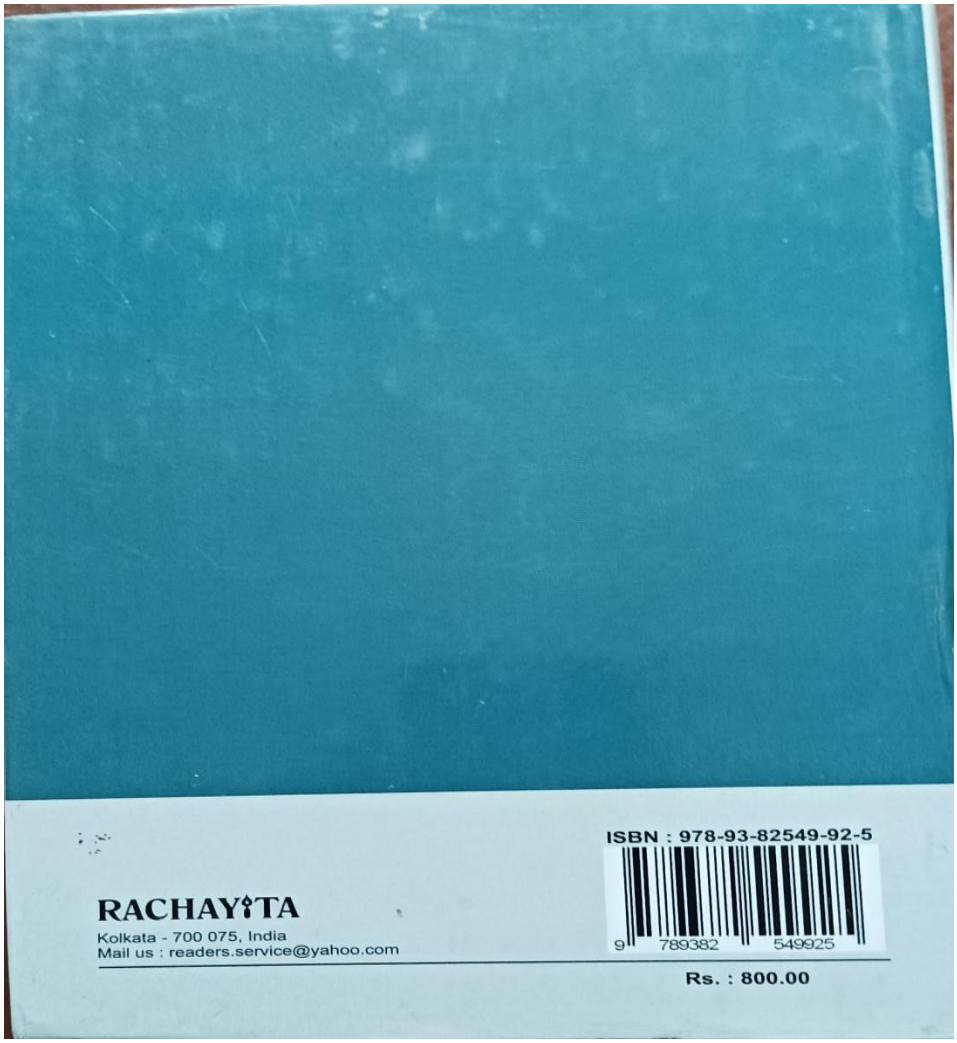

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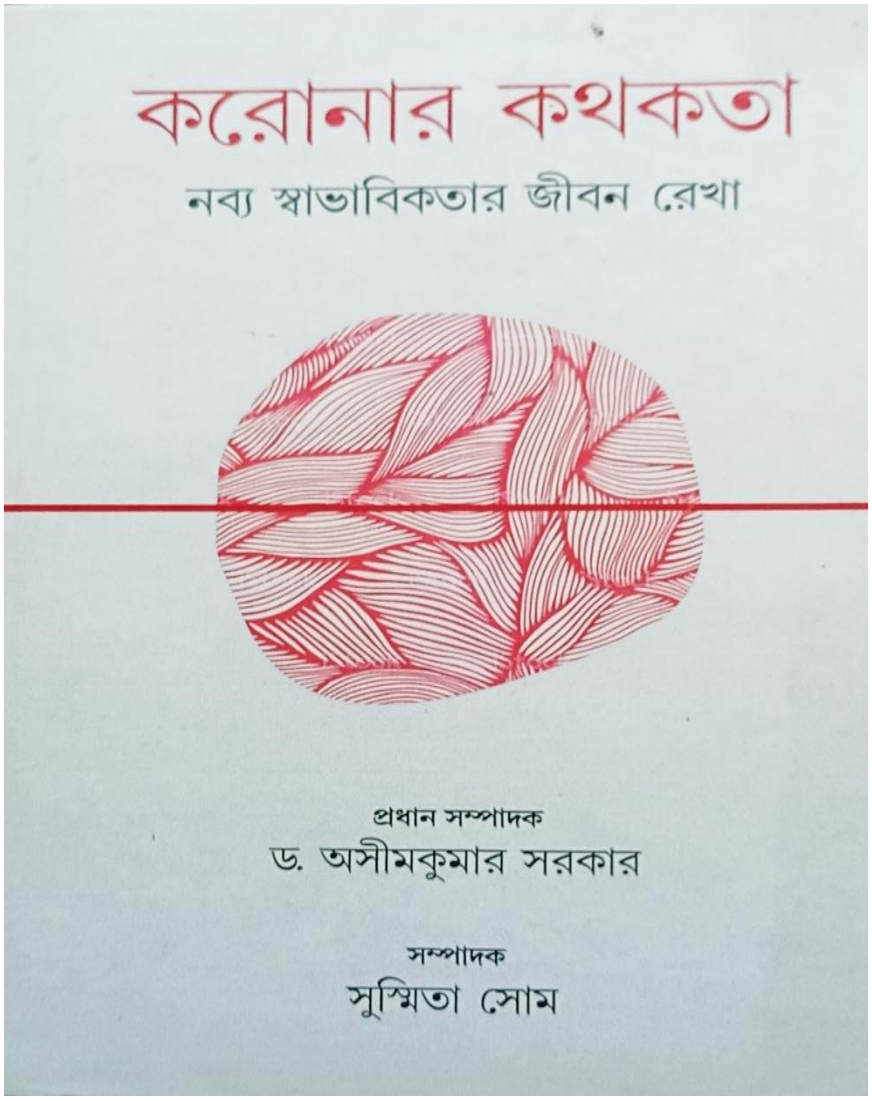

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