Chapter

Polymer-Activated Carbon Composites for Wastewater Treatment

By Dipika Jaspal (/search?contributorName=Dipika Jaspal&contributorRole=author&redirectFromPDP=true&context=ubx)

Edited By Arti Malviya (/search?contributorName=Arti Malviya&contributorRole=editor&redirectFromPDP=true&context=ubx), Smita Jadhav (/search?contributorName=Smita Jadhav&contributorRole=editor&redirectFromPDP=true&context=ubx)

Book Polymer-Carbonaceous Filler Based Composites for Wastewater Treatment (https://www.taylorfrancis.com/books/mono/10.1201/9781003328094/polymer-carbonaceous-filler-based-composites-wastewater-treatment?refId=eb9453f6-5ad8-49b2-945e-9481088e04e5&context=ubx)

Edition	1st Edition
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ABSTRACT

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Microbial Technology for Sustainable E-waste Management pp 127–143

Role of Bacteria for the Recovery of Precious Metals from E-waste

Dipika Jaspal, Smita Jadhav & Prashant Mahajan

Chapter | First Online: 02 March 2023

214 Accesses | **1** Citations

Abstract

Electronic waste (e-waste) is the fast-growing waste produced all over the world, which is estimated to be 20–50 million tons. Printed circuit boards (PCBs) and other electronic equipments are the major contributors to e-waste encompassing a higher concentration of precious metallic elements like copper (Cu), silver (Ag), and gold (Au) as well as it contains hazardous and toxic materials. To avoid the dangerous effect of these substances on living beings and the environment, various methods have been

applied, particularly the use of bacteria to recover metals from e-waste, as a sustainable approach toward the environment. The current chapter focuses on precious metals leaching from PCBs (e-waste) by various bacteria reflecting a feasible and alternative technique to the existing conventional methods for e-waste recycling. In the recovery of precious metals, various researchers have mentioned the vital role played by pH. A massive portion of the valuable metals is estimated to exist in e-waste. Generally, one metric ton of e-waste consists of 160–210 kg of Cu and 80–1500 g Au which is much higher related to that existing in its ore. Bacterial remediation is environmentally feasible, energy-efficient, cost-effective, and reduces secondary pollution. Bacterial leaching exhibites a potential industrial applicability in reclaiming e-waste.

Keywords

E-waste **Bacteria** **Precious metals**

Recovery

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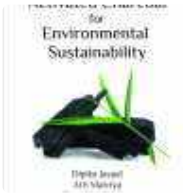
8.1 Introduction

E-waste (electronic waste) generation is a universal concern that entails emergency management. This is not a common waste but is a vital scrap that comprises of substantial quantities of metal



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Dipika Jaspal, PhD – Professor, Symbiosis Institute of Technology, Maharashtra, India*
Arti Malviya, PhD – Associate Professor, Department of Engineering Chemistry, Lakshmi Narain College of Technology, Madhya Pradesh, India
Shraddha Sharma, PhD – Associate Professor, Department of Engineering Chemistry, Lakshmi Narain College of Technology, Madhya Pradesh, India

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DOI: https://doi.org/10.52305/PJPJ7248

Activated Charcoal has proved to be one of the most promising environmentally sustainable material for air, water, and soil remediation. Recently, activated charcoal has also been explored for its use in several other domains including its medicinal benefits. Its superior performance as an adsorbent for controlling contamination and recovery of important resources has led to the augmentation of its applications across industries around the world. Activated charcoal is used in water treatment plants for the exclusion of organic compounds, color, odour, synthetic chemical compounds and antibiotics from wastewater. It proves to be a futuristic substance in terms of health, resources, economy and environmental sustainability.

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along with the available patent studies and research analysis on the material. This book predominantly proposes activated charcoal as a solution to the environmental challenges encountered around the world. This work will help readers understand, appreciate and recognize the wide spectrum utilization of activated charcoal in today's context. The content of this book will facilitate the development of innovative strategies and future research directions to attain sustainability, with the use of this material. The book will be beneficial to scientists, engineers, chemists and researchers in the academic and industrial fields.

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Modern College of Arts, Science, and Commerce, Ganeshkhind, Pune, Maharashtra, India

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Chapter 5. The Removal of Toxic Heavy Metal Ions from Synthetic Wastewater by Bio-Waste

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Smart Computing Techniques and Applications pp 747–756

Gaussian Filter-Based Speech Segmentation Algorithm for Gujarati Language

Priyanka Vishwas Gujarathi & Sandip Raosaheb Patil

Conference paper | First Online: 14 July 2021

503 Accesses

Part of the Smart Innovation, Systems and Technologies book series (SIST,volume 224)

Abstract

Automatic speech segmentation is a main step in speech signal production and analysis process. Great advancement in speech synthesis has already been made using concatenative algorithms. Syllable is most suitable speech unit for concatenative speech synthesis because it does not require extensive prosodic models and provide better co-articulations

than other sound units. To get natural sounding, output speech segmentation plays very important role. Speech segmentation is the process of dividing speech signal in to smaller units of sound. So accurate selection of speech unit and detection of boundaries are very important. In this research work, Gujarati language is used for segmentation and database is created. This paper suggests a method of syllable segmentation to detect boundaries of syllable by means of start point of syllable and end point of syllable. Performance parameters such as accuracy and peak signal to noise ratio (PSNR) are evaluated. Producing natural sounding speech signal in different Indian languages is a very demanding and ongoing problem.

Keywords

Text to speech (TTS) **Syllable** **Gaussian filter**

Start point (SP) **End point (EP)**

Segmentation

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Chapter

Theory, Practical Concepts, Strategies and Methods for Emotion Recognition

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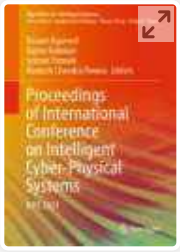

Proceedings of International Conference on Intelligent Cyber-Physical Systems pp 247–262

Conference paper

Comprehensive Review on Machine Learning for Plant Disease Identification and Classification with Image Processing

Shital Jadhav & Bindu Garg

Conference paper | First Online: 24 January 2022

373 Accesses | **2** Citations

Part of the Algorithms for Intelligent Systems book series (AIS)

Abstract

Machine learning techniques are used for crop disease identification and classification. Considering the remote nature of Agriculture, an optimized model needs to be discovered. Traditional handcrafted features lack accuracy compared to the latest

Convolutional Neural Network (CNN) models. Automatic feature extraction and classification is the latest research arena. To deal with the challenges of extracting leaves from the real field images needs to be addressed by an efficient segmentation technique. This paper evaluates popular segmentation techniques with pros and cons. Computation power and accuracy for image classification are evaluated on various parameters. This work reviews and analyzes various approaches used by researchers to solve plant disease diagnosis challenges. After review, it is identified to develop small, fast and accurate models based on Support Vector Machines and compact neural networks like MobileNet for mobile devices. Identifying parameter and hyper-parameters for developing lightweight models evaluated based on present research and future directions for research identified.

Keywords

Machine learning **Deep learning**

Support vector machines **MobileNet**

Agriculture

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A Session Key Based Security Mechanism for Cyber Physical System

Authors Sandip Thite, J. Naveenkumar

Pages 245 - 250
DOI 10.3233/APC210201
Category Research Article
Series Advances in Parallel Computing
Ebook Volume 39: Recent Trends in Intensive Computing

Abstract

In recent years extensive research is going on for the development of applications which convert physical devices into smart devices. Industry 4.0 adopt the technologies under Cyber Physical Systems (CPS) for the development of such types of smart devices. Increase in the use of such type of smart devices without any security mechanism causes an open invitation for cyber attackers to perform cyber-attacks on such devices. Even current security algorithms are not efficiently work due to some constraints of smart devices. The goal of this research paper is to provide effective solution against different cyber-attacks on CPS applications. This paper proposed session key-based security mechanism which is used for the prevention of cyber-attacks and authentication of cyber devices.

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International Conference on Innovative Data Communication Technologies and Application

ICIDCA 2019: **Innovative Data Communication Technologies and Application** pp 676–683

Automatic Greenhouse Parameters Monitoring and Controlling Using Arduino and Internet of Things

More Hemlata Shankarrao & V. R. Pawar

Conference paper | First Online: 31 January 2020

1332 Accesses | **3** Citations

Part of the Lecture Notes on Data Engineering and Communications Technologies book series (LNDECT,volume 46)

Abstract

Greenhouse is provide controlled area environment to grow plants. Growth of the plant always affected by key environmental parameters such as temperature, humidity, light intensity, moisture etc. In the present system, environmental parameters in a greenhouse are monitored and controlled. Sensors

are used for data aquisition and are interfaced with microcontroller unit. Android application is developed to display environmental parameters. To control temperature fan is used. To control humidity fogger is used. To control soil moisture water pump is used. To control light intensity artificial light source is used. Wifi module is interfaced with MCU. Greenhouse parameters can be monitored & controlled using IoT.

Keywords

Greenhouse monitoring and controlling **IoT**

Arduino **Sensors** **Android application**

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Advances in Data Sciences, Security and Applications pp 267–274

Robust Speaker Recognition Based on Low-Level- and Prosodic-Level-Features

S. M. Jagdale, A. A. Shinde & J. S. Chitode

Conference paper | First Online: 03 December 2019

556 Accesses | **3** Citations

Part of the Lecture Notes in Electrical Engineering book series (LNEE,volume 612)

Abstract

Speaker recognition is an important task in security applications where a person is recognized through speech input. In speaker recognition, a person is recognized from his or her voice. As no two individuals have same voice and also they have different speaking style, rhythm, tone, etc., speaker is recognized by extracting low-level spectral features

and high-level behavioural features. This paper presents a robust speaker recognition approach which combines spectral features and prosodic features to improve the performance. The robust recognition system has been tested under different SNR levels. Two subsystems are implemented (i) speaker recognition based on low-level features such as Mel-frequency cepstral coefficient (MFCC) features. (ii) combined system with MFCC and prosodic features. These subsystems are able to achieve competitive results in classifying different speakers. Experimental results are done on interactive emotional dyadic motion capture database (IEMOCAP). The fusion of low-level and prosodic features achieve approximate 15–20% improvement in accuracy.

Keywords

Emotion recognition **MFCC**

Prosodic features **Fusion**

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ICDSMLA 2019 pp 1263–1272

A Survey on the Internet of Things: Applications, Challenges and Opportunities with India Perspective

Sandip Thite & Devendrasingh Thakore

Conference paper | First Online: 19 May 2020

86 Accesses | **1** Citations

Part of the Lecture Notes in Electrical Engineering book series (LNEE,volume 601)

Abstract

Extensive research efforts are going on to contribute to the Internet of Things (IoT) application development. IoT will create network of “Things” capable of communicating and sharing information with one another. The main goal of IoT is to make the physical environment more intelligent. IoT plays an important role in smart cities and smart homes. The

goals of this research paper are six-fold: (i) serve as a guideline for researchers who are new to the Internet of Things (IoT) and want to contribute to this research area, (ii) analyze problems and challenges identified in the implementation of middleware for IoT, (iii) provides a brief overview of the sensor network in Internet of Things (IoT) for building smart cities, (iv) depicts challenges on technologies and applications from India's perspective, (v) proposes a general IoT architecture to meet the architecture challenge, and (vi) provides further research directions required into the Internet of Things (IoT) middleware and software architectures.

Keywords

Smart city **Internet-of-Things**

Cyber-Physical systems **IoT challenges**

IoT applications

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ICDSMLA 2019 pp 1623–1632

The Potent Combo of Software Testing and NLP

Nilofar Mulla & Naveenkumar Jayakumar

Conference paper | First Online: 19 May 2020

107 Accesses | **1** Citations

Part of the Lecture Notes in Electrical Engineering book series (LNEE,volume 601)

Abstract

In the case of the agile software development environment, the key challenge is to generate test cases applying user stories. The newly designed “User story Processor (USP) algorithm” can be used to pre-process the user stories using Natural Language Processing (NLP). This Paper also presents the clear flow for execution for future development. This is ongoing research and as the future scope for real-

time run, plug-in with other testing software will be very efficient. Such plug-in can be deployed for agile software tools as an added functionality as each agile project can contain different modules of the project which need multiple types of testing.

Keywords

Agile development **User story** **NLP** **TDD**

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(Semester II – First Year Engineering (Common to All Branches), SPPU)

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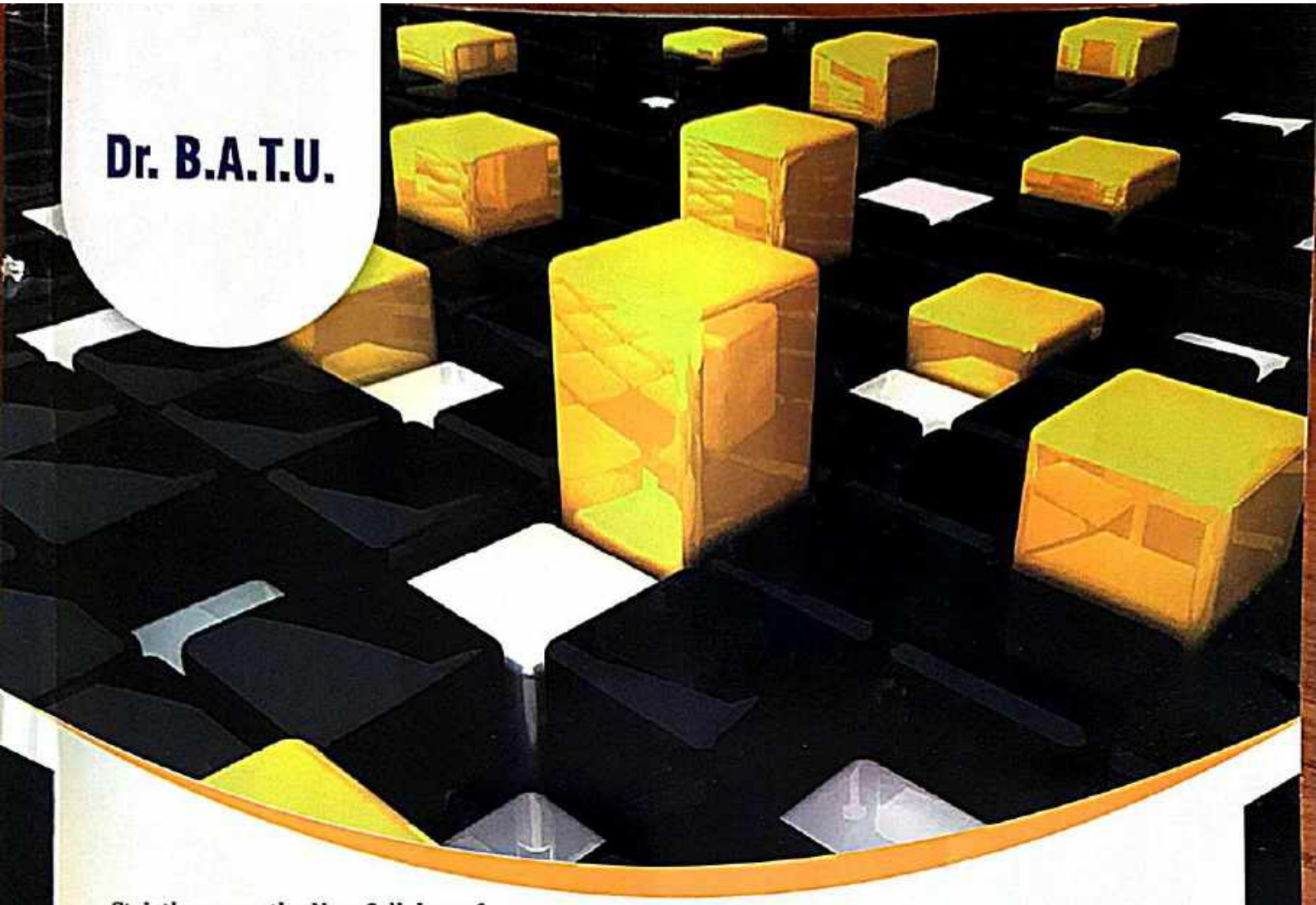

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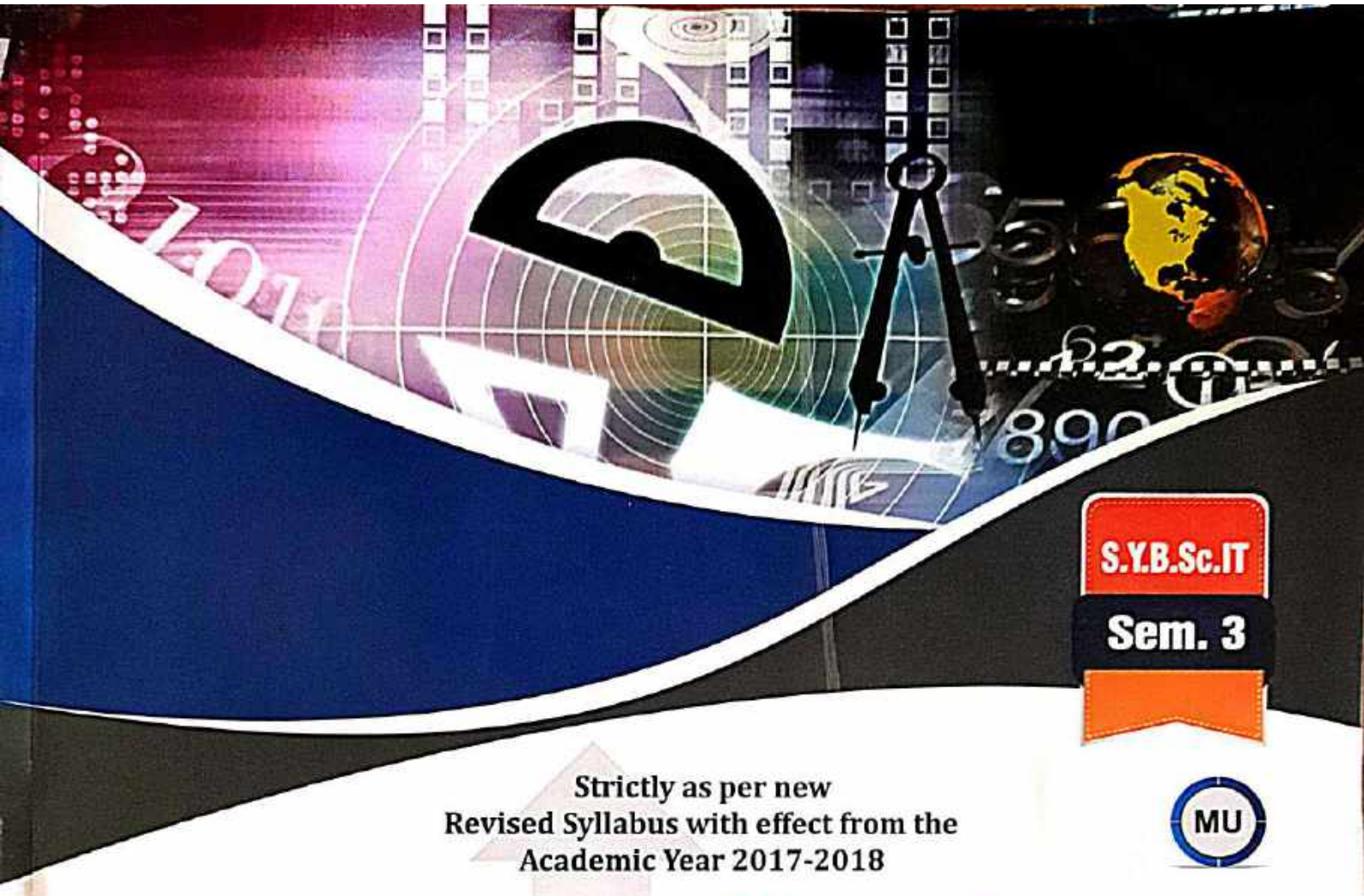

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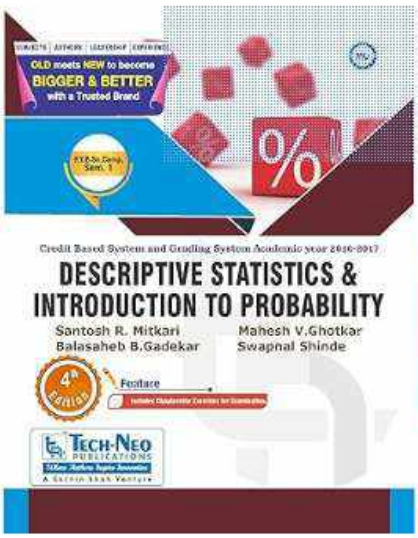

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