ਮਹਾਰਾਜਾ ਰਣਜੀਤ ਸਿੰਘ ਪੰਜਾਬ ਟੈਕਨੀਕਲ ਯੂਨੀਵਰਸਿਟੀ, ਬਠਿੰਡਾ

MAHARAJA RANJIT SINGH PUNJAB TECHNICAL UNIVERSITY

(A State Univ. Estd. by Govt. of Punjab vide Punjab Act No. 5 of 2015 and Approved u/s 2(f) & 12 (B) of UGC; Member AIU)

Bathinda-151001 (Punjab), India

REPORT

2016-21

BOOKS & BOOK CHAPTERS

MAHARAJA RANJIT SINGH PUNJAB TECHNICAL UNIVERSITY

Bathinda-151001 (Punjab), India

BOOKS & BOOK CHAPTERS

2016-21

INTERNAL QUALITY ASSURANCE CELL
MAHARAJA RANJIT SINGH PUNJAB TECHNICAL UNIVERSITY
BATHINDA 151001

BOOKS & BOOK CHAPTERS [2016-21]

Prepared by:

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- Mr. Amit Kumar Tiwari, Department of Food Science & Technology, MRSPTU, Bathinda

Year 2021

INTERNAL QUALITY ASSURANCE CELL

BOOKS & BOOK CHAPTERS

2016-21

List of Books

List of books

S.No.	Department	Name of Faculty	Title of the book/chapter published	Title of the paper	ISBN/ISSN number of the proceeding	Name of the publisher
2021						
1	Food Science and Technology	Dr. Kawaljit Singh Sandhu	Silver-Based Solvent Extraction of EPA/DHA from Fish Oil: Chemistry and Process Development	NA	9781003057543	Taylor & Francis
2	Department of Pharmaceutical Sciences and Technology	Prof. Ashish Baldi	Biotechnical Processing in Food Industry	NA	9781771889124	Taylor & Francis
3	Food Science and Technology	Dr. Kawaljit Singh Sandhu	Biotechnical Processing in the Food Industry: New Methods, Techniques, and Applications	NA	9781771889124	Taylor & Francis
4	Food Science and Technology	Dr. Kawaljit Singh Sandhu	Millets: Properties, Processing, and Health Benefits	NA	9780367562748	Taylor & Francis
2020						
5	Department of Pharmaceutical Sciences and Technology	Mr. Sachin Kumar	Frontiers in Pharmacology of Neurotransmitters	Pharmacology of GABA and its receptors	978-981-15-3556-7	Springer Nature

List of books

6	Food Science and Technology	Dr. Kawaljit Singh Sandhu	Pearl millet: A draught Arrested Crop	NA	9780429331732	Taylor & Francis
7	Computer Science and Engineering	Dr. Naresh Kumar Garg	Review of Optical Devanagari Character Recognition Techniques	Advances in Intelligent Systems and Computing	Print ISBN 978-981-15-5399-8 Online ISBN 978-981-15-5400-1	Springer
8	Food Science and Technology	Dr. Kawaljit Singh Sandhu	Essential Fatty Acids: Sources, Processing Effects, and Health Benefits	NA	9780367335403	Taylor & Francis
9	Department of computational sciences	Dr. Amitoj Singh	Agile Enterprise Engineering: Smart Application of Human Factors	NA	978-3-030-40989-0	Springer
2019						
10	Mathematics	Dr.Mukesh	A Text Book of Engineering Mathematics	NA	978-620-0-08407-1	Lambert academic publishing
11	Mathematics	Dr.Mukesh	Principles of Operations Research	NA	978-620-0-09175-8	Lambert academic publishing

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12	Department of Computational Sciences	Dr. Munish Kumar	Benchmark Datasets for Offline Handwritten Gurmukhi Script Recognition	NA	1865-0929	IEEE
2018						
13	Department of Pharmaceutical Sciences and Technology	Dr. Puneet Kumar	Animal Models of Neurological Disorders: Principle and Working Procedure for Animal Models of Neurological Disorders	NA	978-981105981-0, 978-981105980-3	Springer
14	Department of Pharmaceutical Sciences and Technology	Prof. Ashish Baldi	Biodiversity Effect on Volatile Oil Content of Pelargonium Graveolent	NA	978-613-9-89002-6	Lambert Academic Publishing, Saarbrucken, Germany
15	Department of Pharmaceutical Sciences and Technology	Prof. Ashish Baldi	Harmonized Regulatory Guidelines for Probiotics	NA	978-613-8-38785-5	Lambert Academic Publishing, Saarbrucken, Germany
2017						
16	Department of Pharmaceutical Sciences and Technology	Dr. Rahul Deshmukh	Animal Models of Multiple Sclerosis (MS): Animal Models of Neurological Disorders	NA	978-981-10-5980-3	Springer Nature

List of books

17	Civil Enginnering	Dr. Manjeet Bansal	Basic Civil Engineering	NA	9789383412914	Eagle's
18	Department of ECE	Dr. K.S.Bhatia	Keystroke Dynamics Based User Authentication Using Numeric Keypad	NA	978-150903518-2	IEEE access
2016						
19	Mathematics	Dr. Mukesh	Information Theoretic Models and Applications- An Analytic Approach	NA	978-3-8381-5352-0	SHV
20	University Business School	Dr Pritpal Singh	Strategic Financial Management	NA	ISBN: 978-93-272-6851-5	Kalyani Publishers
21	University Business School	Dr Pritpal Singh	Indian Financial System	NA	ISBN: 978-93-272-5922-3	Kalyani Publishers
22	Civil Engineering	Dr. Manjeet Bansal	Environmental Engineering	NA	9789383412884	Eagle's

List of Book Chapters

List of Book Chapters

S.No.	Department	Name of Faculty	Title of the book/chapter published	Title of the paper	ISBN/ISSN number of the proceeding	Name of the publisher
2021						
1	Department of Pharmaceutical Sciences and Technology	Ms. Prabhsharan Kaur	Diabetes and Diabetic Complications: Current status and future perspectives	Novel pharmacological approaches for diabetic complications	978-1-53619-177-6	Nova Science Publishers
2	Department of Pharmaceutical Sciences and Technology	Dr. Rahul Deshmukh	Clinical Perspectives and Targeted Therapies in Apoptosis	Physiology of cellular demise: Apoptosis, necrosis, and autophagy	978-981-10-5980-3	Elsevier
3	Electronics and Communication Engineering	Er Sukhjinder Singh	Intelligent System Design	Review of optical Devanagari character recognition techniques	Online ISBN 978-981-15-5400-1	Springer, Singapore
4	Mechanical Engineering	Dr. Kamaljit Singh Boparai	Handbook of Polymer Nanocomposites for Industrial Applications	Nanomaterial in additive manufacturing for energy storage applications	978-0-12-821497-8	Elsevier
5	Mechanical Engineering	Dr. Kamaljit Singh Boparai	Non-Conventional Hybrid Machining Processes: Theory and Practice	Abrasive Jet machining	978-0-367-13913-1	Taylor and Francis

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6	Textile Engineering	Devanand Uttam	Recent Trends in Traditional and Technical Textiles.	The effect of wet processing on the comfort and mechanical properties of fabrics made from cotton fibres and its blends with modal and tencel fibres in weft.	ISBN 978-981-15-9995-8	Springer, Singapore
7	CSE	Dr. Naresh Kumar Garg	Real-Time Implementation of Enhanced Energy-Based Detection Technique	Optimized data hiding for the image steganography using hvs characteristics	Print ISBN: 978-981-15-7532-7 Electronic ISBN: 978-981-15-7533-4	Springer Singapore
8	ME	Anil Jindal	Multi-Criteria Decision Modelling	Structural modelling for the factors of facility management in the healthcare industry using the tism approach	9781003125150	CRC Press
2020						
9	Department of Pharmaceutical Sciences and Technology	Mr. Sachin Kumar	Frontiers in Pharmacology of Neurotransmitters	Pharmacology of GABA and its receptors	978-981-15-3556-7	Springer Nature
10	Computer Science and Engineering	Dr. Naresh Kumar Garg	Intelligent System Design, Advances in Intelligent Systems and Computing	Review of Optical Devanagari Character Recognition Techniques	Print ISBN 978-981-15-5399-8 Online ISBN 978-981-15-5400-1	Springer

List of Book Chapters

11	Department of Electrical engineering	Er. Gurcharan Singh	A study of Remote Monitoring Methods for Solar Energy System	NA	978-981-15-2739-5	Springer
12	Department of computational sciences	Dr. Amitoj Singh	Agile Enterprise Engineering: Smart Application of Human Factors	NA	978-3-030-40989-0	Springer
2019						
13	Food Science and Technology	Dr. Kawaljit Singh Sandhu	Nanobiotechnology in Bioformulations	Nanotechnology: a successful approach to improve nutraceutical bioavailability	2523-8027	Springer
14	Department of Pharmaceutical Sciences and Technology	Dr. Uttam Kumar Mandal	Recent Progress in Medicinal Plants Volume 49 Inflammatory Disorders.	Pharmacognosy, phytochemistry and pharmacology of dysoxylum binectariferum.	1626990867	Studium Press LLC, New Delhi
15	Department of Pharmaceutical Sciences and Technology	Prof. Ashish Baldi	Microbiology for Food and Health	Molecular techniques for detection of foodborne pathogens: salmonella and bacillus cereus	9.78E+12	Apple Academic Press
16	Mechanical Engineering	Dr. Kamaljit Singh Boparai	Additive Manufacturing of Emerging Materials	Effect of process parameters of fused deposition modeling and vapour smoothing on surface properties of abs replicas for biomedical applications	978-3-319-91712-2	springer

List of Book Chapters

17	Mechanical Engineering	Dr. Kamaljit Singh Boparai	Additive Manufacturing of Emerging Materials	Development of Rapid Tooling Using Fused Deposition Modeling	978-3-319-91712-2	springer
18	Mechanical Engineering	Dr. Kamaljit Singh Boparai	Nano Bio Engineering	Rapid nano tooling in clinical dentistry	978-0-8153-4835-1	Taylor and Francis
19	Mechanical Engineering	Dr. Kamaljit Singh Boparai	Additive Manufacturing: Applications and Innovations	Fused deposition modelling: applications and advancements	978-1-1380-5060-0	Taylor and Francis
20	ME	Dr. Kamaljit Singh Boparai	Additive Manufacturing of Emerging Materials	Development of rapid tooling using fused deposition modeling	978-3-319-91712-2	springer
21	Physics	Dr. Pooja Devi	NA	Flexible and highly sensitive Cl2 sensor based on solution processed phthalocyanine nanowires	1551-7616	Americian Institute of Physics
	2018					
22	Department of Pharmaceutical Sciences and Technology	Dr. Rahul Deshmukh	Animal Models of Neurological Disorder	Non-transgenic animal models of alzheimer's disease	978-981-10-5980-3	Springer Nature
23	Department of Pharmaceutical Sciences and Technology	Dr. Rahul Deshmukh	Animal Models of Neurological Disorder	Animal models of neuropathic pain	978-981-10-5980-3	Springer Nature
24	Department of Pharmaceutical	Dr. Rahul Deshmukh	Animal Models of Neurological Disorder	Animal models of tourette's syndrome:	978-981-10-5980-3	Springer Nature

List of Book Chapters

	Sciences and Technology					
25	Department of Pharmaceutical Sciences and Technology	Dr. Rahul Deshmukh	Animal Models of Neurological Disorder	Animal models of multiple sclerosis (ms)	978-981-10-5980-3	Springer Nature
26	Department of Pharmaceutical Sciences and Technology	Dr. Rahul Deshmukh	Animal Models of Neurological Disorder	Commonly used laboratory anesthetics	978-981-10-5980-3	Springer Nature
27	Electronics and Communication Engineering	Dr Savina bansal	Anylasis of hetrogensituy characteristics for hetrogenous WSNs	Anylasis of hetrogensituy characteristics for hetrogenous WSNs	978-981-10-8660-1_21	Springer Nature
28	Mechanical Engineering	Dr. Kamaljit Singh Boparai	Additive Manufacturing of Emerging Materials	Effect of process parameters of fused deposition modeling and vapour smoothing on surface properties of abs	978-3-319-91712-2	Springer
29	Department of Pharmaceutical Sciences and Technology	Dr. Puneet Kumar	Animal Models of Neurological Disorders: Principle and Working Procedure for Animal Models of Neurological Disorders	Animal models of neurological disorders: principle and working procedure for animal models of neurological disorders	978-981105981-0, 978-981105980-3	Springer
30	Textile Engineering	Dr.Rajeev Kumar Varshney	NA	Low-stress mechanical properties of wool-cotton union fabric	1544-0478	Taylor & Francis

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31	Physics	Dr. Pooja Devi	NA	Zinc phthalocyanine nanowires based flexible sensor for room temperature Cl2 detection	1551-7616	Americian Institute of Physics
32	Computational Sciences	Dr. Munish Kumar	NA	Pulmonary lesion detection and staging from ct images using watershed algorithm		IEEE
33	EE	Prof. (Dr.) Sarbjeet Kaur Bath	NA	Design and analysis of renewable energy-based hybrid model for Remote Applications	DOI: 10.1109/ICPEICES.2018.8897484	
34	CSE	Dinesh Kumar	NA	Multiple-input multiple-output (mimo) cognitive radio user selection using channel state information at transmitter	2017 IJSRCSEIT | Volume 2 | Issue 3 | ISSN: 2456-3307	IEEE
2017						
35	University Business School	Dr Pritpal Singh	In 25 Years of Globalization and Indian Economy	Corporate debt restructuring- a case of Arvind mills.	ISBN: 978-93-86432-97-1	Bloomsburry, USA
36	Computer Science and Engineering	Naresh Kumar Garg	Lecture Notes on Data Engineering and Communications Technologies book series (LNDECT, volume 9)	Writer identification system for handwritten gurmukhi characters: study of different feature-classifier combinations	Print ISBN978-981-10-6318-3 Online ISBN978-981-10-6319-0	Springer
37	GZS School of Architecture & Planning	Jatinder Kaur	Understanding Built Environment	Investigating the architectural manifestations of path and place in sacred sikh architecture	ISBN: 978-981-10-2138-1	Springer

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38	GZS School of Architecture & Planning	Dr. Bhupinderpalsingh Dhot	Understanding Built Environment	Bansal haveli at Bathinda: sustainability paradigm	ISBN: 978-981-10-2138-1	Springer
39	ME	Harish Kumar Garg	Development of New metal/polymer Materials for Rapid Tooling Using FDM	NA	978-3-659-76060-0	Lap Lambert Academic publishing
40	ME	Kamaljit Singh Boparai	NA	Experimental investigations for wear properties of rapid tooling with nano scale fillers for grinding applications	978-0-7918-5072-5	ASME
2016						
41	Electrical Engineering	Prof. (Dr.) Sarbjeet kaur Bath	Scope of Biogeography Based Optimization for Economic Load Dispatch and Multi-Objective Unit Commitment Problem	Sustaining power resources through energy optimization and engineering	ISBN13: 9781466697553, ISBN10: 1466697555, EISBN13: 9781466697560	IGI Global Publications, USA

Proofs: Books

BOOKS PROOFS

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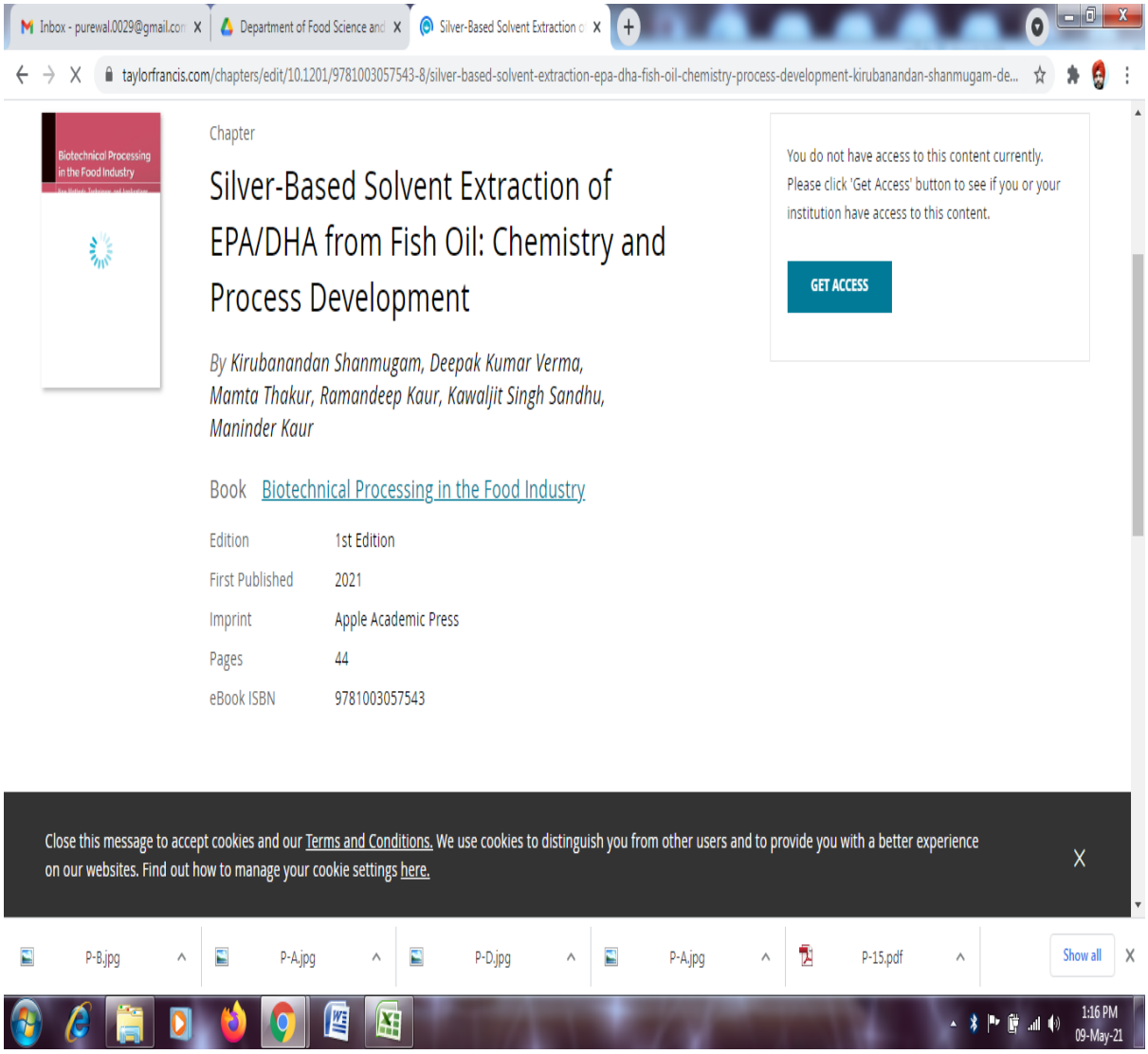

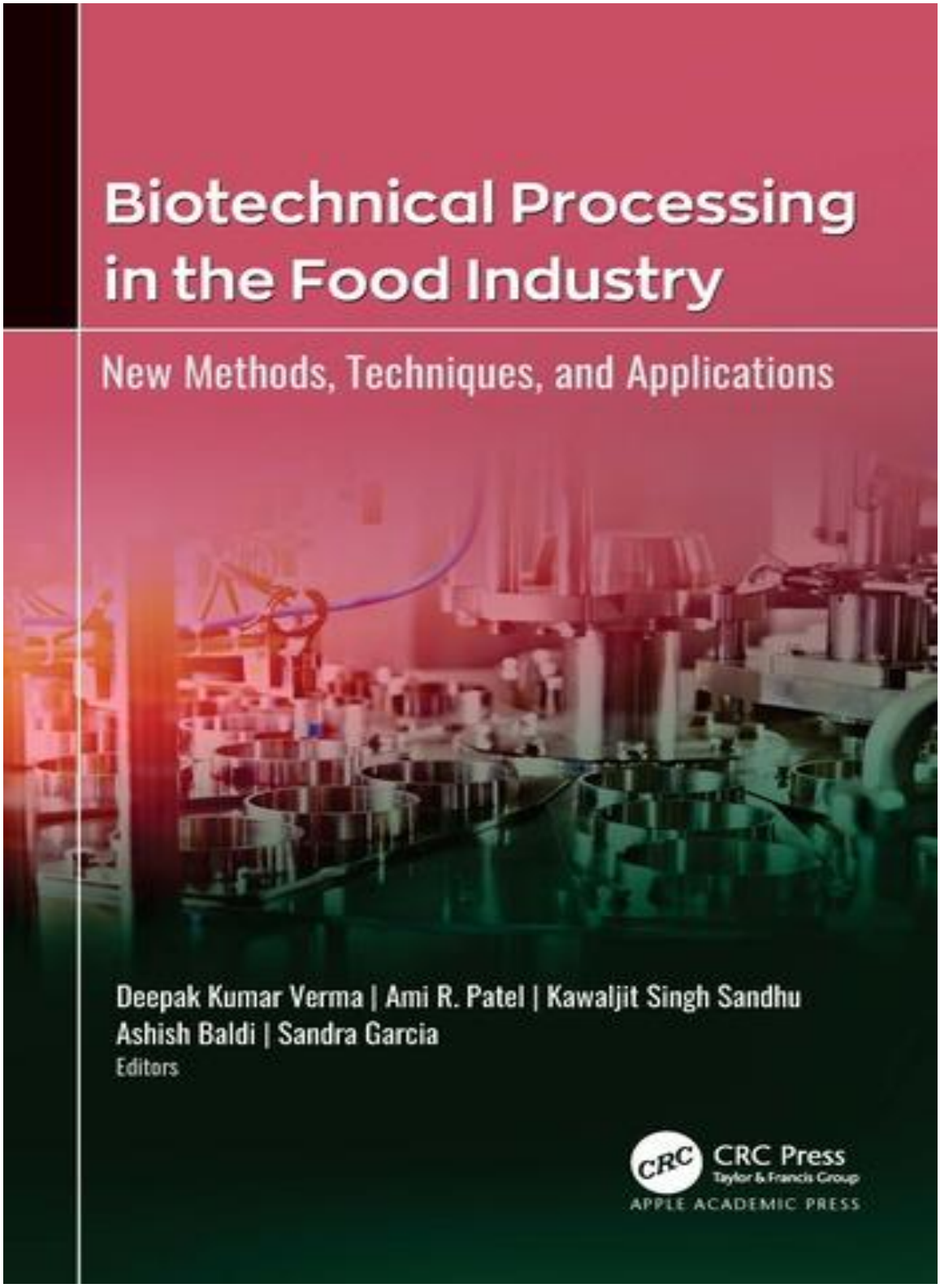
Biotechnical Processing in the Food Industry
New Methods, Techniques, and Applications
Deepak Kumar Verma | Ami R. Patel | Kawaljit Singh Sandhu
Ashish Baldi | Sandra Garcia
Editors
CRC Press
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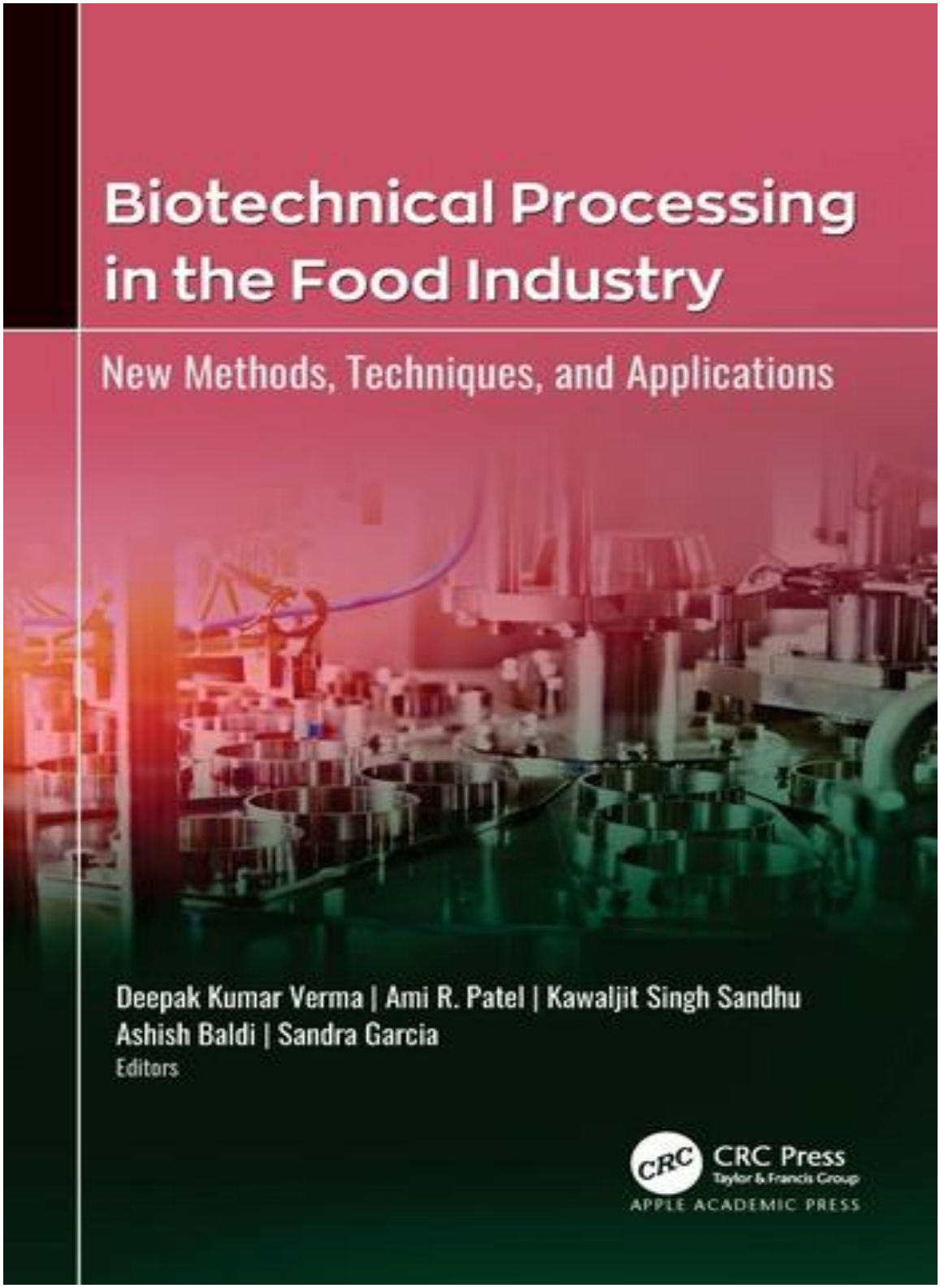
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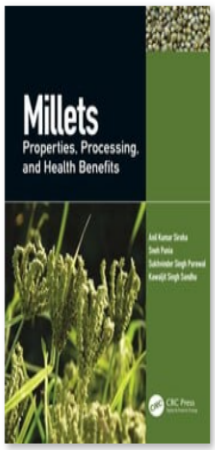


Book

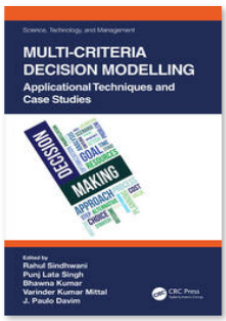
Millets

Properties, Processing, and Health Benefits

By Anil Kumar Siroha, Sneh Punia, Sukhvinder Singh Purewal, Kawaljit Singh Sandhu

Edition	1st Edition
First Published	2021
eBook Published	30 July 2021
Pub. Location	Boca Raton
Imprint	CRC Press
DOI	https://doi.org/10.1201/9781003105947
Pages	272
eBook ISBN	9781003105947
Subjects	Environment & Agriculture, Food Science & Technology

Citation



Chapter

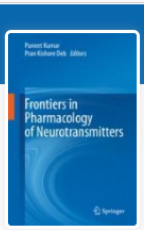
Structural Modelling for the Factors of Facility Management in the Healthcare Industry Using the TISM Approach

By Rahul Sindhwani, Punj Lata Singh, Rajender Kumar, Bhawna Kumar, Varinder Kumar Mittal, Sumeet Dixit, Anil Jindal

Book Multi-Criteria Decision Modelling

Edition	1st Edition
First Published	2021
Imprint	CRC Press
Pages	22
eBook ISBN	9781003125150

2020



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Frontiers in Pharmacology of Neurotransmitters

Editors: (view affiliations) Puneet Kumar, Pran Kishore Deb

Provides valuable insights about the various Neurotransmitters and their receptors

Elaborates in detail the role of various computer aided drug design (CADD) strategies for the design of therapeutic ligands modulating various receptors

Identifies the latest pharmacological advancements towards better understanding of pathophysiology of Neurological receptors

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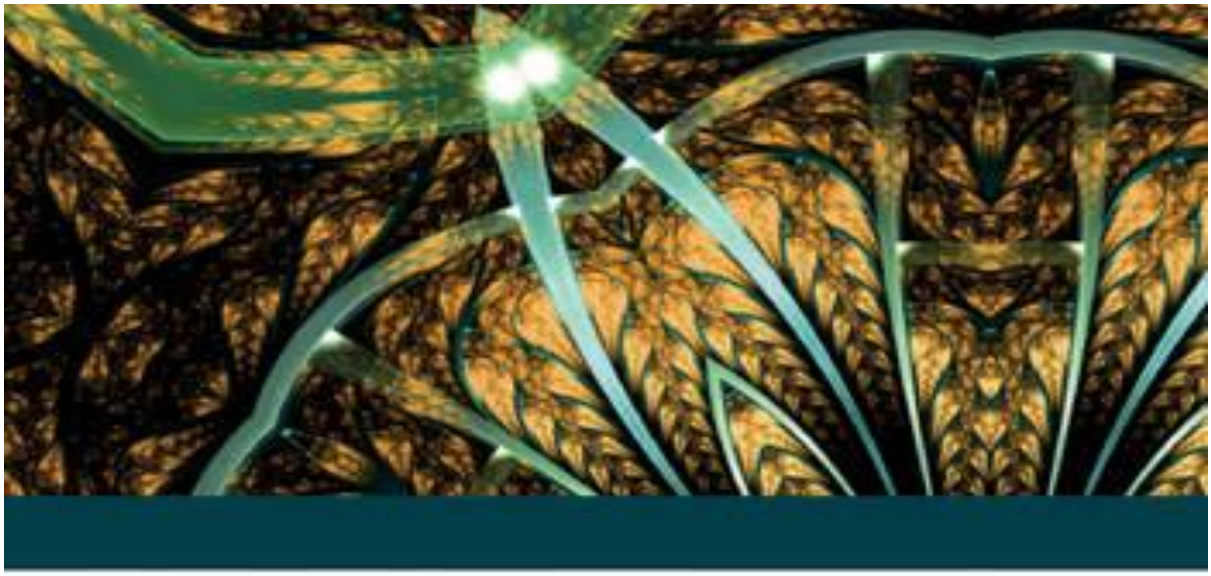
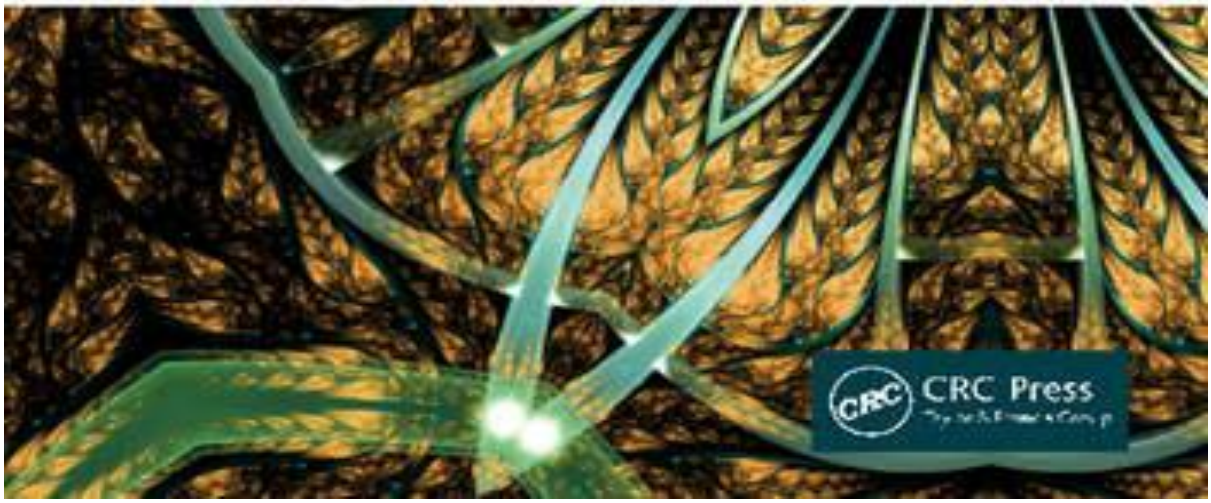
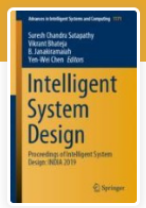


PEARL MILLET

PROPERTIES, FUNCTIONALITY AND ITS APPLICATIONS

Edited by
Sneh Punia, Anil Kumar Siroha,
Kawaljit Singh Sandhu, Suresh Kumar Gahlawat
and Maninder Kaur





Intelligent System Design pp 97–106 | Cite as

Review of Optical Devanagari Character Recognition Techniques

Sukhjinder Singh & Naresh Kumar Garg

Conference paper | First Online: 11 August 2020

442 Accesses | **1** Citations

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1171)

Abstract

Optical character recognition techniques are capable of automatic translating of document images into equivalent character codes, so it helps in saving human energy as well as cost

Essential Fatty Acids

Sources, Processing Effects, and Health Benefits

EDITED BY
Sanju Bala Dhull
Sneh Punia
Kawaljit Singh Sandhu

CRC Press
Taylor & Francis Group

Book | © 2020

Agile Enterprise Engineering: Smart Application of Human Factors

Models, Methods, Practices, Case Studies

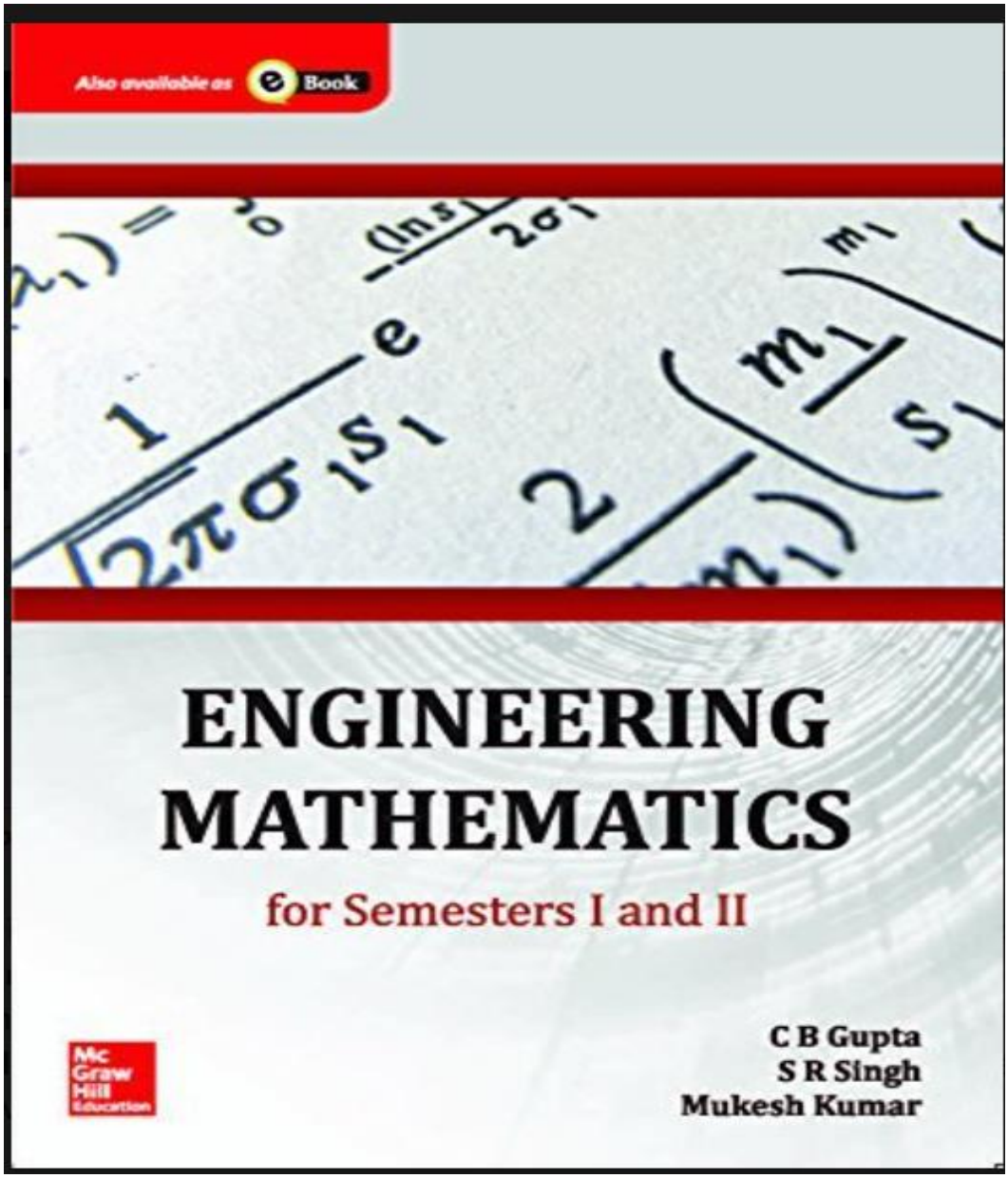
Authors: (view affiliations) Sergey V. Zykov, Amitoj Singh

Focuses on human-related factors in agile development of state-of-the-art, enterprise-level businesses

Presents well-known agile methodologies and practices with a focus on their evolutionary changes and the resulting benefits

Identifies agile diversity to help the stakeholders understand and identify the key social and human

2019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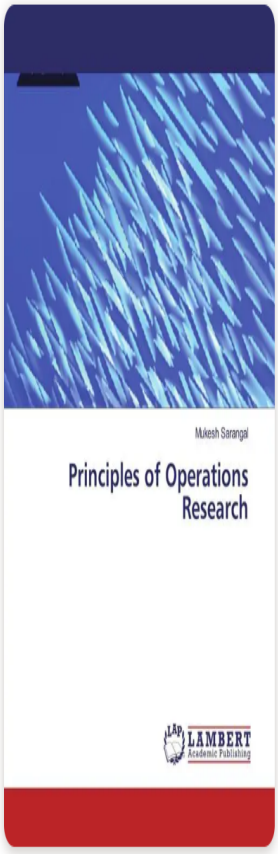


Book - PDF

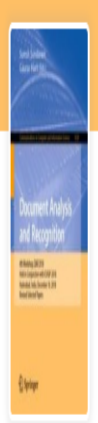
Principles of Operations Research

Mukesh Sarangal

Book details | Table of contents | Citations

About This Book

Operations Research which is relatively a new discipline starts when mathematical and quantitative techniques are used to substantiate the decision being taken. In our daily life we make the decisions which are taken simply by common sense, judgment and expertise without using any mathematical or any other model in simple situations. Operations Research takes tools from different disciplines such as mathematics, statistics, economics, psychology, engineering etc. and combines these tools to make a new set of knowledge for decision making. Today, it has become a professional discipline which deals with the applications of scientific methods for making decisions and especially to the allocation of scarce resources. The main purpose of the



Workshop on Document Analysis and Recognition

↳ DAR 2018: **Document Analysis and Recognition** pp 143–151 | Cite as

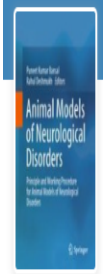
Benchmark Datasets for Offline Handwritten Gurmukhi Script Recognition

Munish Kumar ✉, R. K. Sharma, M. K. Jindal, Simpel Rani Jindal & Harjeet Singh

Conference paper | First Online: 05 July 2019

Part of the Communications in Computer and Information Science book series (CCIS,volume 1020)

2018



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Animal Models of Neurological Disorders

Principle and Working Procedure for Animal Models of Neurological Disorders

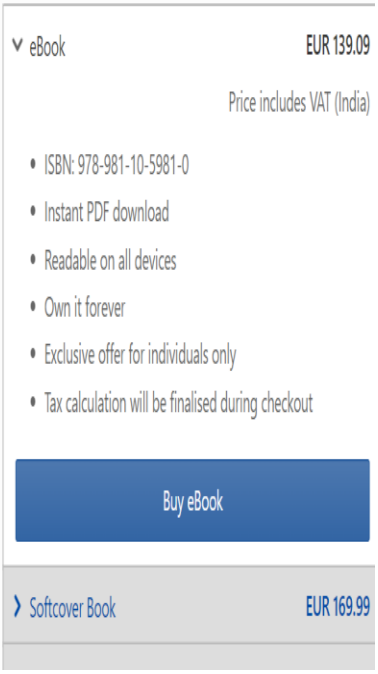
Editors: (view affiliations) Puneet Kumar Bansal, Rahul Deshmukh

Introduces undergraduate, postgraduate and research students to the different animal models for studying neurological disorders

Discusses different types of animal models of neurological disorders, the working principle, experimental protocols, different doses of toxins and includes diagrammatical representations

Provides insights into the pathophysiology of neurological disorders

Discusses in detail specific procedures for the induction of neurological disorders so they can be easily reproduced in the laboratory



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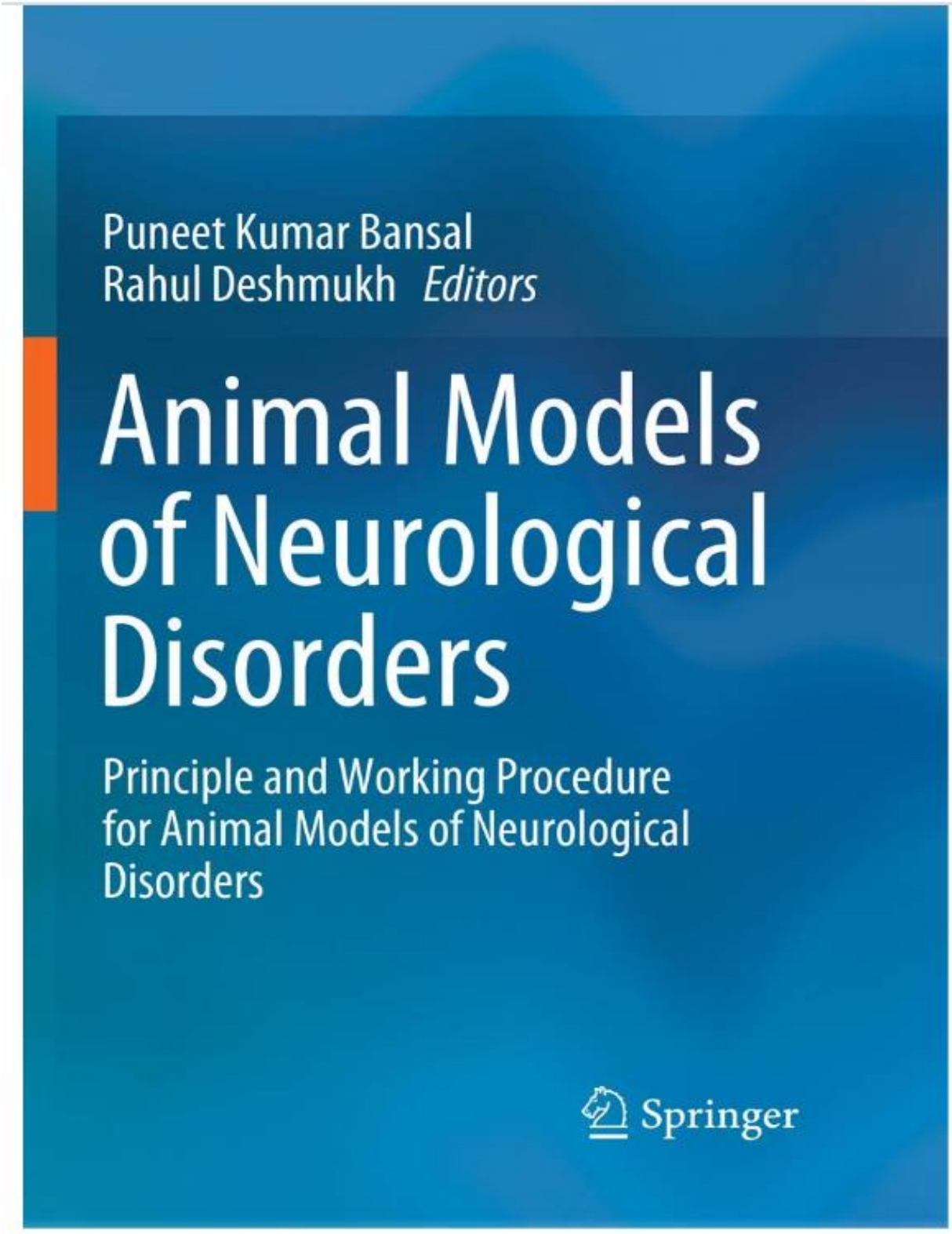
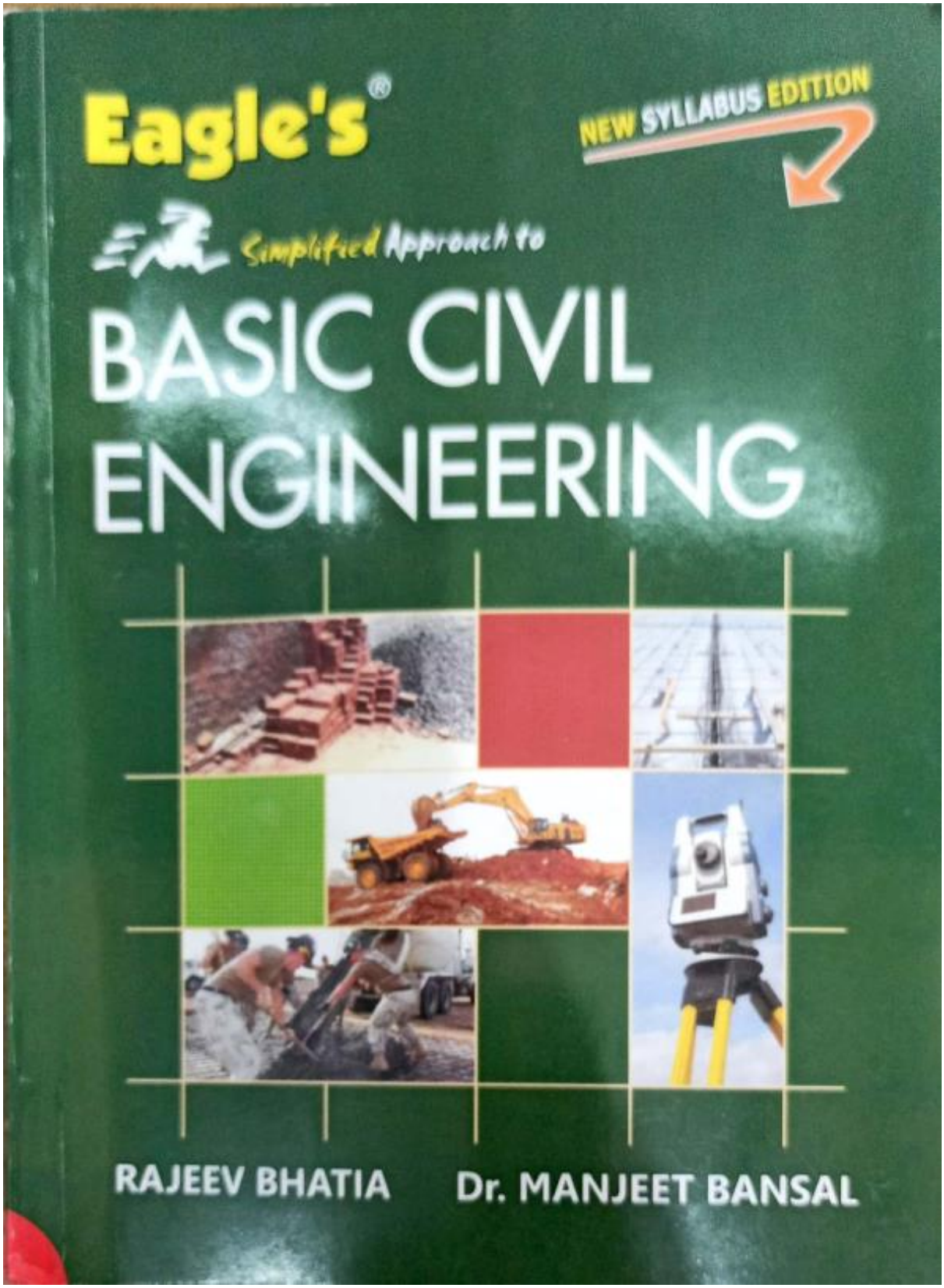

Puneet Kumar Bansal
Rahul Deshmukh Editors
Animal Models of Neurological Disorders
Principle and Working Procedure for Animal Models of Neurological Disorders
Springer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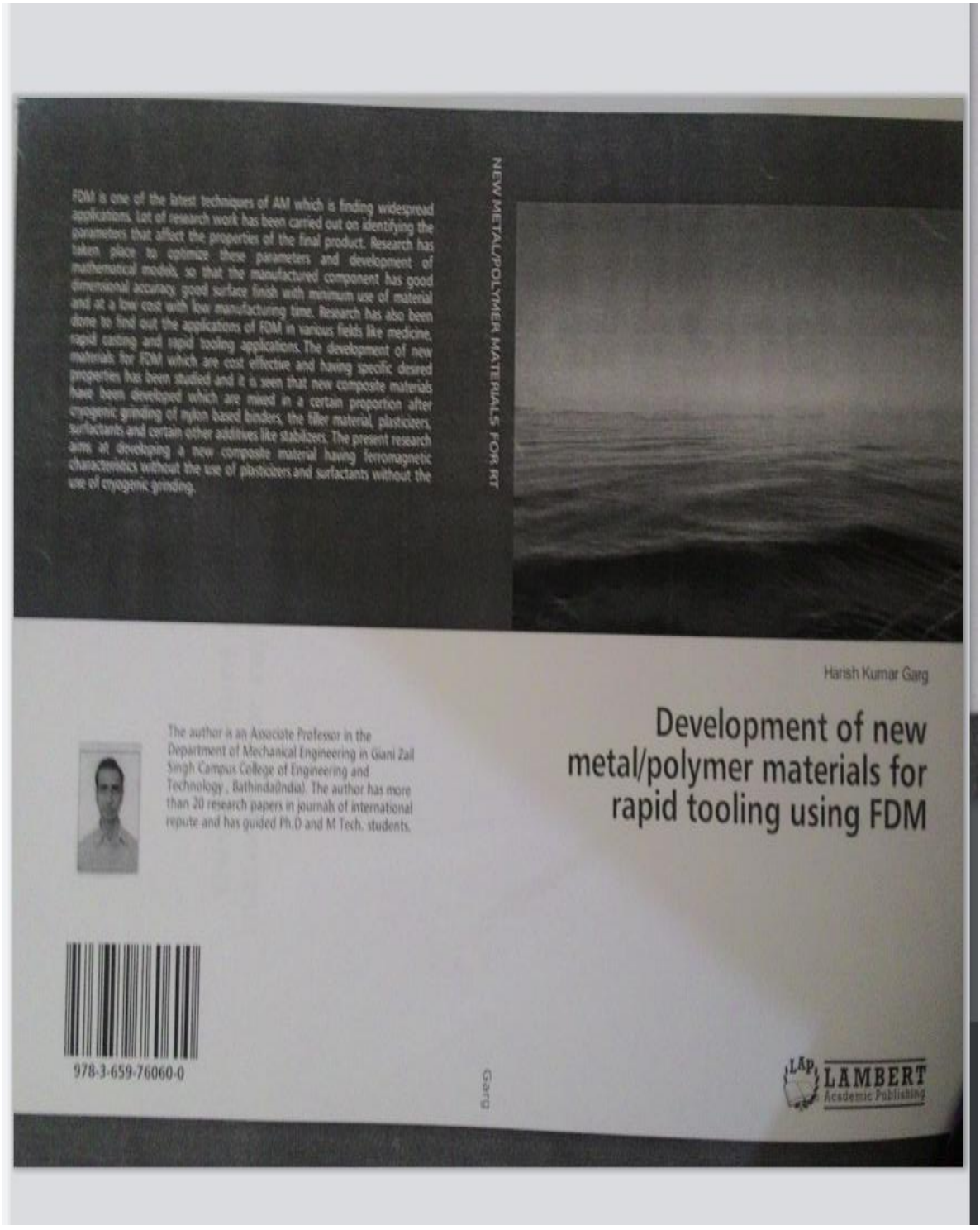
FDM is one of the latest techniques of AM which is finding widespread applications. Lot of research work has been carried out on identifying the parameters that affect the properties of the final product. Research has taken place to optimize these parameters and development of mathematical models, so that the manufactured component has good dimensional accuracy, good surface finish with minimum use of material and at a low cost with low manufacturing time. Research has also been done to find out the applications of FDM in various fields like medicine, rapid casting and rapid tooling applications. The development of new materials for FDM which are cost effective and having specific desired properties has been studied and it is seen that new composite materials have been developed which are mixed in a certain proportion after cryogenic grinding of nylon based binders, the filler material, plasticizers, surfactants and certain other additives like stabilizers. The present research aims at developing a new composite material having ferromagnetic characteristics without the use of plasticizers and surfactants without the use of cryogenic grinding.
NEW METAL/POLYMER MATERIALS FOR RT
Harish Kumar Garg
Development of new metal/polymer materials for rapid tooling using FDM
The author is an Associate Professor in the Department of Mechanical Engineering in Giani Zail Singh Campus College of Engineering and Technology , Bathinda(India). The author has more than 20 research papers in journals of international repute and has guided Ph.D and M Tech. students.
978-3-659-76060-0
Garg
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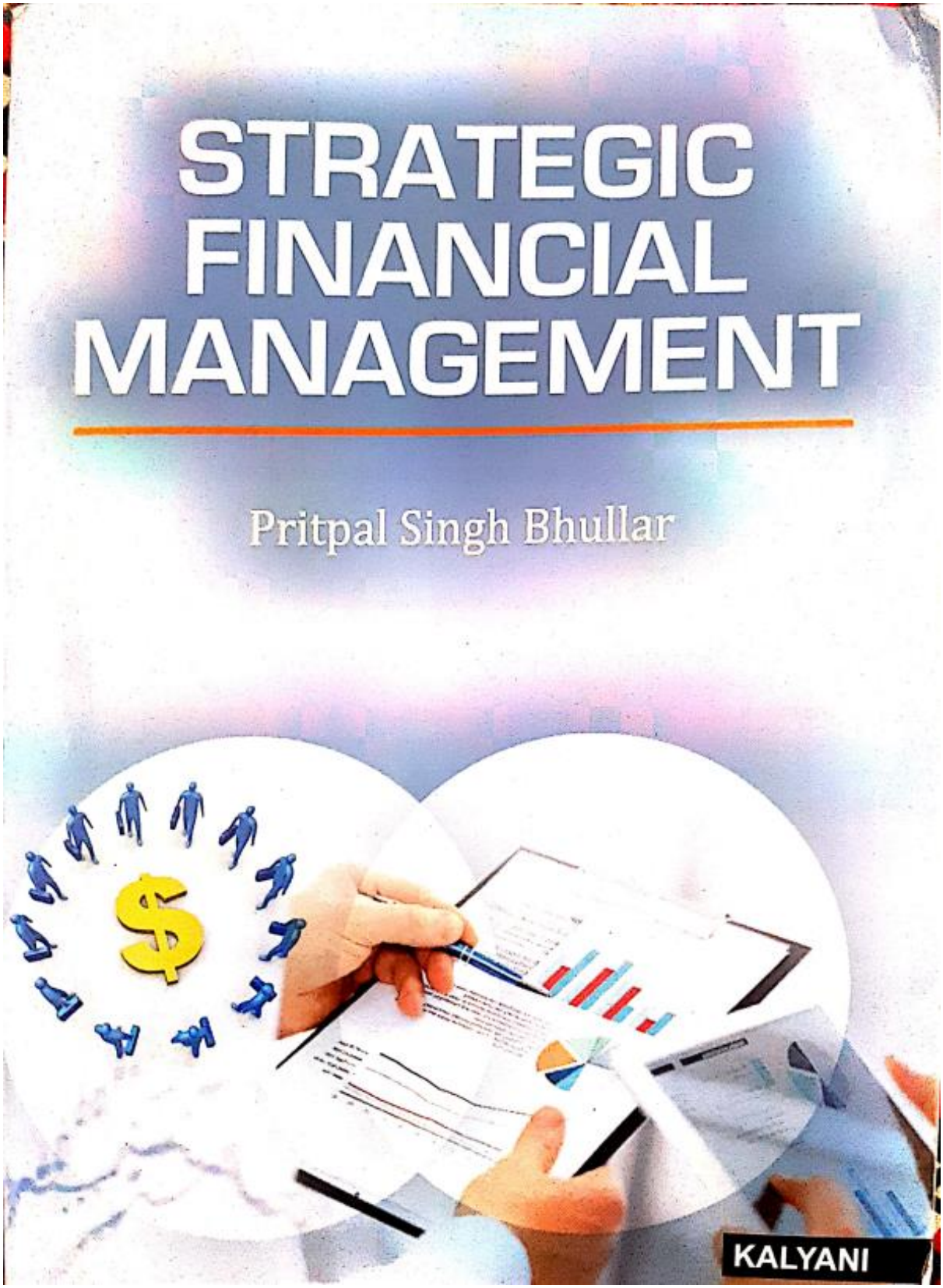
2016

Mukesh Sarangal

Information Theoretic Models and Applications

An Analytic Approach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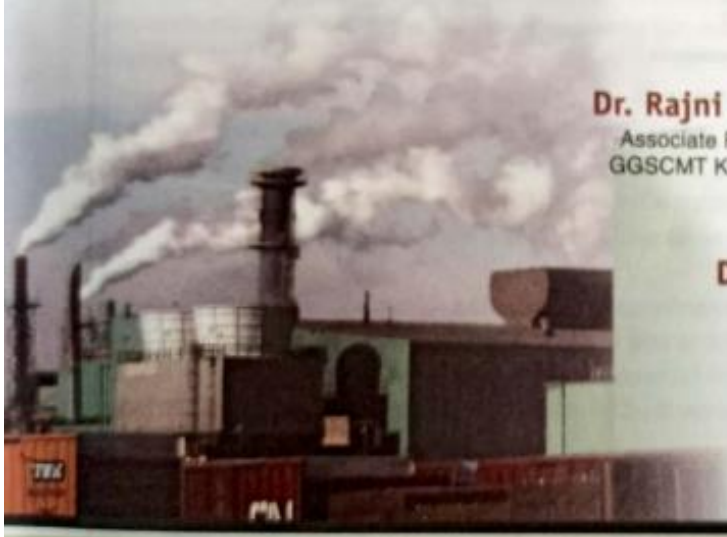

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Chapter 15

NOVEL PHARMACOLOGICAL APPROACHES FOR DIABETIC COMPLICATIONS

Anchal Arora[1], Uma Shanker Navik[2], Aiswarya Jaiswal[2], Prabhsharan Kaur[1] and Puneet Kumar[2,]*

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ABSTRACT

Diabetes is a chronic illness characterized by uncontrolled hyperglycemia, disturbances in carbohydrate, and lipid and protein metabolism due to impaired function of insulin-secreting pancreatic β-cell, insulin action or both. If not treated on time diabetes patients are more prone to developing secondary complications such as microvascular complications, including nephropathy, retinopathy, neuropathy, diabetic foot, dermopathy, and macrovascular complications like coronary arteries disease, peripheral arterial disease, stroke and cardiomyopathy. This increases the co-morbidity and mortality rate among diabetes patients. Therefore, hyperglycemia management could be of profound clinical significance to reduce the rate of complications of diabetes. Further, hyperglycemia results in the activation of multiple abnormal signaling pathways that poses more complex diabetes pathology resulting in end-organ damage. Traditionally, the available approved therapy, such as insulin and sulphonylureas, possesses side effects such as weight gain and hypoglycaemic shock. Therefore developing a novel therapy for targeting complex pathways for mitigating diabetes complications is highly appreciable. Hence, this chapter aims to discuss the novel therapeutic approaches for treating diabetes complications with their mechanism of action.

Keywords: diabetes mellitus, hyperglycaemia, secondary complications, novel treatments

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Chapter contents Book contents

Outline

Abstract
Keywords
Acknowledgments
Introduction
Cell injury and adaptation
Cell death
Apoptosis
The caspase machinery
Regulation of apoptosis
Intrinsic and extrinsic pathways of apoptosis
Perforin/granzyme pathway in apoptosis
Intracellular substrates for granzyme B
Cell death mechanisms in neurodegenerative disorders
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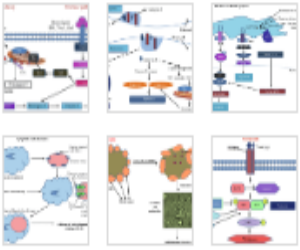
Figures (12)



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Clinical Perspectives and Targeted Therapies in Apoptosis

Drug Discovery, Drug Delivery, and Disease Prevention

2021, Pages 23-78

Chapter 2 - Physiology of cellular demise: Apoptosis, necrosis, and autophagy

Darshpreet Kaur [a, b], Rahul Deshmukh [b]

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Abstract

Cells can respond to stress in numerous ways either by the activation of survival pathways or initiating cell death signaling cascade that eventually eliminates damaged cells. The different modes of cell death include apoptosis, necrosis, and autophagy. Apoptosis and autophagy are the programmed or physiological forms of cell death but can also occur in pathological conditions. Autophagy is a self-degradative process, important for balancing sources of energy at critical times and plays a housekeeping role in removing misfolded or aggregated proteins, clearing damaged organelles, as well as eliminating intracellular pathogens. Thus, autophagy is generally thought of as a survival mechanism, although its deregulation has been linked to nonapoptotic cell death. On the other hand, necrosis has long been regarded as an unprogrammed death of cells and does not follow a highly regulated intracellular program as seen in apoptosis. However, unlike apoptosis, necrotic cell death is not the result of one or two well-described signaling cascades but is the consequence of extensive cross-talk between various molecular events. Thus, necrotic cell death is as well-controlled and programmed as caspase-dependent apoptosis but occurs during an insult or injury. Several human disorders can be attributed either directly or indirectly to defective cell death mechanisms. This chapter summarizes the characteristics and cross-talk between different modes of cell death and its implication in major world health issues such as cancer, neurodegenerative disorders, heart failure, and liver injuries.

Previous chapter in book

Next chapter in book

Keywords

Cell death; Apoptosis; Autophagy; Aggregated proteins; Necrosis; Unprogrammed death; Caspase-dependent; Signaling cascades

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Review of Optical Devanagari Character Recognition Techniques

Intelligent System Design pp 97-106 | Cite as

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Conference paper
First Online: 11 August 2020

Part of the Advances in Intelligent Systems and Computing book series (AISC, volume 1171)

Abstract

Optical character recognition techniques are capable of automatic translating of document images into equivalent character codes, so it helps in saving human energy as well as cost. These techniques can play a key role to improve or enhance the interaction between human and machine in many applications such as postal automation, signature verification, recognition of city names and automatic bank cheque processing/reading. This paper gives a review of various techniques explored for Devanagari word/text and isolated character recognition in the past few years. Different challenges to optical character recognition are also presented in this work. In the end, practical aspects towards the development of a robust optical character recognition system has been discussed along with directions for future research.

Keywords

Optical character recognition Feature extraction Classification Devanagari script

Handbook of Polymer Nanocomposites for Industrial Applications

Micro and Nano Technologies

2021, Pages 529-543

Chapter 19 - Nanomaterial in additive manufacturing for energy storage applications

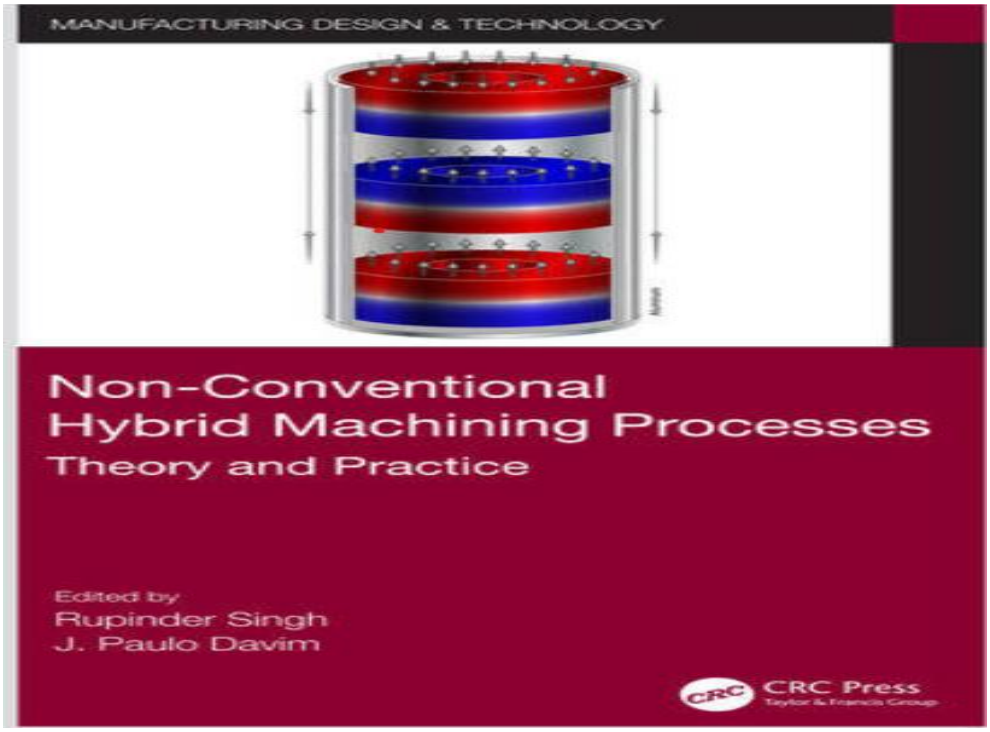
Kamaljit Singh Boparai, Abhishek Kumar, Ashwani Kumar, Aditya Aman, Sartaz Singh, Rajat

Show more

https://doi.org/10.1016/B978-0-12-821497-8.00019-8

Abstract

This chapter has highlighted the characterization of composite materials (reinforced nanomaterial in polymeric material) for energy storage applications. This newly developed material can be used as a consumable in fused deposition modeling (FDM) process. Initially the proportions of nanoscaled reinforced material (LiMnO, graphite, and NH_4Cl) in Nylon 6 matrix have been estimated by melt flow index value. The differential scanning calorimeter observations not only realized the decrease of crystallinity with the inclusion of nanofillers but also realized that these particles act as a thermodynamic sink and improves its thermal stability. Finally structural changes are illustrated by FTIR and scanning electronic microscope images. These alternative feedstock filament materials (in lieu of commercially available standard material) were successfully developed and can be loaded in commercial FDM setup without changing any hardware and software. The potential applications of this investigation include the printing of functional parts of energy storage device such as dry cell, having tailor made geometry and capacity. Moreover it also leads to utilize polymeric waste with economical manner.



8 Abrasive Jet Machining
Overview and Scope

Kamaljit Singh Boparai
GZSCCET, MRS Punjab Technical University

Jasgurpreet Singh Chohan
Chandigarh University

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The Effect of Wet Processing on the Comfort and Mechanical Properties of Fabrics Made from Cotton Fibres and Its Blends with Modal and Tencel Fibres in Weft

Devanand Uttam and Garima Ahlawat

1 Introduction

To survive in throat-cutting competitive environment and to satisfy modern customers; the textile manufacturers and researchers are searching some new products which have improved properties. Modern customers consider comfort as one of the most important attributes in their purchase of textile and apparel products [1]. To achieve improved functional textiles; one attempt is to produce cotton/modal blended fabric and cotton/tencel blended fabrics.

Cotton is a natural cellulosic fibre while Modal and Tencel Lyocell are regenerated cellulosic fibres. The Modal® and Tencel® LF are cellulosic regenerated fibres manufactured by Lenzing Company, Austria. Like viscose, Tencel is produced from wood pulp but the process is chemically much less complex. Modal is a type of high wet modulus rayon and manufactured using cellulose obtained from beech trees [2–4]. The Tencel fibre has highest strength, elongation and moisture regain followed by modal fibre and cotton fibres. Although, wet tenacity reduced in both Modal and Tencel fibres; while it increases in cotton fibre. The cotton fibres show highest wet tenacity followed by Tencel fibres and modal fibres [2, 4]. The cross-sectional shapes of various fibres are shown in Fig. 1.

Mostly all cellulosic fabrics are gone through the two main wet processing stages: scouring and dyeing. These may alter the structure and properties of fabrics. This requires a detailed study. In the present work, three types of plain-woven fabrics are

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2021 | OriginalPaper | Buchkapitel

21. Optimized Data Hiding for the Image Steganography Using HVS Characteristics

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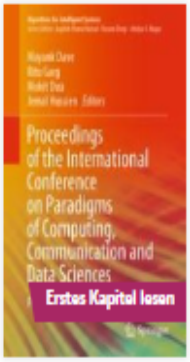

Abstract

Steganography algorithms used to secure sensitive data on the Internet. It hides the secret data in the cover image and provides imperceptibility to the attacker. The least significant bit (LSB) is the most preferred data hiding technique in the steganography. In this technique, the least significant bit of the cover image pixel replaced with data bits. In the literature, the data hiding achieved without considering the human visual system (HVS) characteristics that degrade the visual quality of the image. In this paper, the optimized data hiding has done while considering the HVS characteristics. The colour image contains three planes known as the red–green–blue plane. The green plane is the most sensitive, and blue is less sensitive to the human eyes. Thus, in the proposed technique, the green plane used as a reference plane for data hiding in the red and blue planes. In the optimized data hiding technique, the secret data bits match with the cover pixel bits. If the bits match, then the corresponding optimal index determines, else data hiding done in the LSB bits of the cover pixel. After that, the optimal indexes hide in the cover image using a 2-bit LSB technique. In the proposed technique, image smooth and edge region characteristics explored before data hiding. There is a high correlation between the consecutive pixels in the smooth region and the minimum correlation on the edges. Thus, we have matched the secret data bits with the cover pixel bits in the smooth region and hide the optimal indexes on the edges. The experimental results performed on the standard dataset images downloaded from the USC-SIPI image database. The experimental results show that the proposed technique provides better visual quality as compared to the existing techniques.

Chapter

Structural Modelling for the Factors of Facility Management in the Healthcare Industry Using the TISM Approach

By Rahul Sindhwani, Punj Lata Singh, Rajender Kumar, Bhawna Kumar, Varinder Kumar Mittal, Sumeet Dixit, Anil Jindal

Book Multi-Criteria Decision Modelling (https://www.taylorfrancis.com/books/mono/10.1201/9781003125150/multi-criteria-decision-modelling?refId=b4d85360-a3dd-4805-b34d-8c475b9a1590)

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ABSTRACT

Next Chapter › (chapters/edit/10.1201/9781003125150-2-2/assessment-optimum-automotive-brake-friction-formula-entropy-vikor-technique-vishal-ahlawat-parinam-anuradha-sunil-nain-sanjay-kajal-praveen-tewatia-mukesh-kumar)

Pharmacology of GABA and Its Receptors

8

Sunpreet Kaur, Shamsher Singh, Anchal Arora, Parladh Ram, Sachin Kumar, Puneet Kumar, and Sara Nidal Abed

Abstract

GABA is an important neurotransmitter in vertebrates where it acts at synapses of the CNS; in nematodes GABA acts primarily at neuromuscular synapses. Specifically, GABA acts to relax the body muscles during locomotion and foraging and to contract the enteric muscles during defecation. Following the recognition of GABA as an inhibitory neurotransmitter, the discovery of high-affinity GABA uptake and the characterization of GABA receptors have made great progress in developing GABA pharmacology. Tiagabine, the first marketed GABA uptake inhibitor, may be followed by new and more selective uptake inhibitors. This chapter centers on the discoveries made during more than six decades of neuroscience research on the role of GABA as a neurotransmitter. In doing so, special emphasis is placed on the significant involvement of GABA in the normal physiology of the human body such as sleep, reproductive system, heart, learning and memory. GABA dysregulation also categorizes various neurological disorders and enlisted their potential therapeutic drug targets under research that encompass Parkinson's disease, Alzheimer's disease, epileptic disorders, traumatic brain injury (TBI), Huntington's disease, anxiety, multiple

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P. Kumar, P. K. Deb (eds.), *Frontiers in Pharmacology of Neurotransmitters*,
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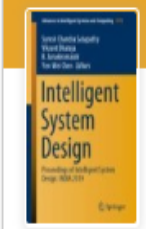

Intelligent System Design pp 97–106 | Cite as

Review of Optical Devanagari Character Recognition Techniques

Sukhjinder Singh & Naresh Kumar Garg

Conference paper | First Online: 11 August 2020

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1171)

Abstract

Optical character recognition techniques are capable of automatic translating of document images into equivalent character codes, so it helps in saving human energy as well as cost. These techniques can play a key role to improve or enhance the interaction between human and machine in many applications such as postal automation, signature verification, recognition of city names and automatic bank cheque processing/reading. This paper gives a review of various techniques explored for Devanagari word/text and isolated character recognition in the past few years. Different challenges to optical character recognition are also presented in this work. In the end, practical aspects towards the development of a robust optical character recognition system has been discussed along with directions for future research.

Keywords

Optical character recognition **Feature extraction** **Classification** **Devanagari script**

Recent Trends in Image and Signal Processing in Computer Vision pp 55-65 | Cite as

A Study of Remote Monitoring Methods for Solar Energy System

Authors | Authors and affiliations

Gurcharan Singh, Amit Kumar Manocha

Chapter
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Part of the Advances in Intelligent Systems and Computing book series (AISC, volume 1124)

Abstract

In this paper, we have discussed various techniques and methods of remote monitoring. The aim of this paper is to update the readers about the latest techniques of remote monitoring in solar systems and their advantages and disadvantages. In order to prevent the damage of photovoltaic cells used in solar energy generation and its forecasting, it is essential to continuously monitor the conditions of PV panels through mounted sensors. We also have discussed how developed algorithms for remote monitoring of solar energy systems can increase the overall efficiency of the solar energy systems to overcome the critical issue of the energy sector.

Keywords

Photovoltaic (PV) cell | Maximum power point tracking (MPPT) | Supervisory control and data acquisition (SCADA) | Cloud computing

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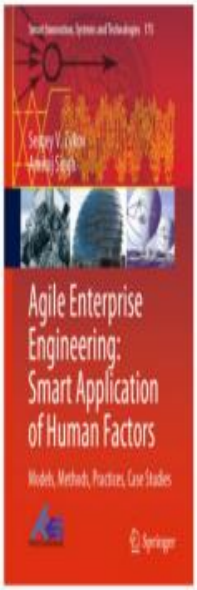

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Authors Authors and affiliations

Sneh Punia, Kawaljit Singh Sandhu, Maninder Kaur, Anil Kumar Siroha

Chapter
First Online: 05 July 2019

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Part of the Nanotechnology in the Life Sciences book series (NALIS)

Abstract

Nutraceuticals are foods and food constituents that provide health benefits beyond basic nutrition. Most biologically active constituents—such as flavonoids, tannins, and terpenoids—are highly soluble in water but have low absorption because they are unable to cross the lipid membranes of the cells, have an excessively large molecular size, or are poorly absorbed, resulting in loss of bioavailability and efficacy. Nanotechnology provides an opportunity for new perspectives in all scientific and technological fields. Recent developments in nanoscience and nanotechnology are aimed at novel and innovative applications in the food sector; these initiatives are rather recent in comparison with the established use of nanotechnology in biomedical and pharmaceutical applications. Among these applications, nutraceuticals represent a fast-growing field in nanoresearch. It has been widely proposed to combine nutraceuticals with nanotechnology because nanostructured systems may be able to potentiate the action of plant extracts, reducing the required dose and side effects, and improving activity. The common biocompatible and biodegradable nanoparticles include nanoliposomes, nanoemulsions, lipid nanocarriers, micelles, and poly (lactide-co-glycolic acid) (PLGA) nanoparticles. The rapid growth of nutraceutical nanotechnology carries great promise to provide new and effective functional foods as a tool for preventing and possibly even curing

Recent Progress in Medicinal Plants

Volume 49

Inflammatory Disorders

J N Govil, Surender Singh
Ritu Karwasra, Priyanka Singh

Foreword to the Series
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CHAPTER 7

Molecular Techniques for Detection of Foodborne Pathogens: Salmonella and *Bacillus cereus*

DEEPAK KUMAR VERMA,[1*] BALARAM MOHAPATRA,[2*] CHANCHAL KUMAR,[3] NEHA BAJWA,[4] KUMARI SHANTI KIRAN,[2] G. KIMMY,[5] ASHISH BALDI,[4] AMI R. PATEL,[6] BARKHA SINGHAL,[7] ALAA KAREEM NIAMAH,[8] and PREM PRAKASH SRIVASTAV[1]

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Development of Rapid Tooling Using Fused Deposition Modeling

Kamaljit Singh Boparai and Rupinder Singh

1 Introduction

Fused deposition modeling (FDM) process has been emerged as a revolution in the field of additive manufacturing (AM)) where complex 3D structures can fabricate in less time without the assistance of conventional tooling. FDM can be commonly used for modeling, prototyping, and batch production applications. Among applications, it include concept modelling, functional prototypes, manufacturing tooling and end use parts. From the identification of component, prototypes of acrylonitrile butadiene styrene (ABS) plastic material were prepared for commercial end user applications in vacuum molding, vacuum casting, investment casting etc. [1] Generally, the fabricated parts are used for design verification, functional testing, medical applications and patterns for casting process [2].

2 Development of Low Cost Composite Material Feedstock Filament

The detailed experimental study has been conducted at Manufacturing Research Lab (MRL), Guru Nanak Dev Engineering College (GNDEC), Ludhiana, Punjab to develop feed stock filament of composite material for FDM process in order to increase the application range of FDM parts. The various steps for the development of feed stock filaments are shown in Fig. 1.

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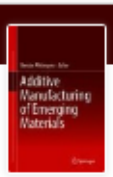


Additive Manufacturing of Emerging Materials pp 251–277 | Cite as

Development of Rapid Tooling Using Fused Deposition Modeling

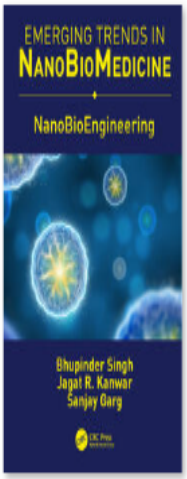
Kamaljit Singh Boparai & Rupinder Singh

Chapter | First Online: 01 August 2018

Abstract

This chapter highlights the in house development of low cost alternative FDM feedstock filament with tailor made properties. The experimental study was performed to fabricate (Nylon6-Al-Al_2O_3 based) alternative fused deposition modeling (FDM) feedstock filament in place of commercial acrylonitrile butadiene styrene (ABS) filament (having specific rheological and mechanical properties) for rapid manufacturing (RM) and rapid tooling (RT) applications. The detailed steps for fabrication of alternative FDM feedstock filament (as per field application) with relatively low manufacturing cost and tailor made properties have been highlighted. The rheological and mechanical suitability of Nylon6-Al-Al_2O_3 feedstock filament has been verified experimentally. The approach is to predict and incorporate essential properties such as flow rate, flexibility, stiffness, and mechanical strength at processing conditions and compared with commercial ABS material. The proportions of various constituents have been varied in order to modify and improve rheological behavior and mechanical properties of alternative FDM feedstock filament. The developed feed stock filament was loaded in commercial FDM setup without any change in hardware and software. The results of study suggest that the newly developed composite material filament has relatively poor mechanical properties but have high thermal stability and wear resistant as compared to ABS filament and hence can be used for tailor made applications.

Finally, the Taguchi experimental log have been designed for investigating the significance of input parameters of screw extruder (such as: mean barrel temperature, die temperature, screw speed, material composition and speed of take up unit) on the diameter deviation of fabricated filaments was analyzed. The tensile strength of alternative feedstock filament has been investigated experimentally according to ASTM-638 standard. The analysis was performed by ANOVA method with the help of MINITAB 17 software. The regression model was developed to realize the influence of input parameters on responses. Tensile strength was significantly affected by the variation of major input parameters during the processing of alternative material on single screw extruder. The ANOVA analysis shows that two process parameters (namely: material composition and die temperature) were significant and remaining two (mean barrel temperature and screw speed) were insignificant. Further a linear



Chapter

Rapid Nano-Tooling in Clinical Dentistry

By Kamaljit Singh Boparai, Rupinder Singh

Book NanoBioEngineering

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Imprint	CRC Press
Pages	16
eBook ISBN	9781351138901

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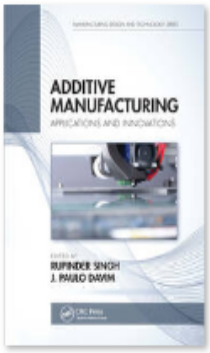
ABSTRACT

This work is focused on the development of rapid nano-tooling and the wide applications in clinical dentistry. Rapid nano-tooling has been accomplished on a fused deposition modeling (FDM) setup with a composite material feed-stock filament, comprising of biocompatible polymer composite reinforced with nano-aluminum oxide (Al_2O_3) particles, in order to cater to the needs of a wear-resistant tailor-made grinding wheel for dental applications. The friction and wear behavior of FDM parts, fabricated with composite material and an acrylonitrile butadiene styrene (ABS) material feed-stock filament, were compared under dry sliding conditions. The tests were performed by applying loads of 5, 10, 15 and 20N at room temperature. The results highlight various wear mechanisms, such as adhesive, abrasive and fatigue. The composite material showed remarkable improvement in wear properties as compared to the ABS material. The parts fabricated with the proposed composite material feed-stock filament are highly more wear resistant than basic ABS filament, especially for grinding applications.



Chapter

Fused Deposition Modelling

Applications and Advancements

By Kamaljit Singh Boparai, Rupinder Singh, Jasgurpreet Singh Chohan

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ABSTRACT

The present chapter focuses on advancements made to enhance the functionality of FDM parts for customized applications. FDM, in recent years, has emerged to be the most versatile and simple technology having the capability to utilise a wide range of materials as per requirement. Although the surface quality of FDM parts is not up to a satisfactory level, it can be refined through various techniques that have been discussed in detail. An advanced surface finishing technique called vapour smoothing has been studied in depth. The coupled FDM and vapour smoothing processes have a potential to ameliorate the surface of plastic parts, which can be used as patterns for investment casting to fabricate tailor-made products. The chapter also aims to assist prospective researchers with mathematical models to predict and control surface properties such as roughness, hardness and accuracy. The mathematical models have been derived using a systematic procedure of the Buckingham Pi method and are also validated through graphical representations.

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Additive Manufacturing of Emerging Materials

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- Bandar AlMangour

Book

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Flexible and highly sensitive Cl_2 sensor based on solution processed phthalocyanine nanowires

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TOPICS
- Sensors
- Nanowires

ABSTRACT

We have fabricated a flexible chemiresistive sensor by depositing solution processed substituted copper phthalocyanine nanowires onto the flexible PET substrate. It has been demonstrated that the sensor was highly sensitive and selective towards Cl_2 at room temperature (300K) with a minimum detection limit as low as 5 ppb of Cl_2. Interestingly, the sensor exhibited enhanced and faster response kinetics under bend conditions. The gas sensing mechanism of sensor has been discussed on the basis of XPS and Raman spectroscopic studies which revealed that copper ions were the preferred sites for Cl_2 interactions.

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Non-transgenic Animal Models of Alzheimer's Disease

Sneha Shree, Rajat Bhardwaj, Kashish and Rahul Deshmukh

1 Introduction

Alzheimer's disease (AD) is a leading cause of progressive dementia and most common neurodegenerative disease worldwide. The prevalence rate of AD is expected to get triple by 2050. Pathological hallmarks of AD are amyloid-β containing plaques and neurofibrillary tangles (NFT's), which are composed of hyperphosphorylated forms of the microtubule-associated protein tau. AD may be classified as early-onset (familial AD) and late-onset (sporadic AD). Familial AD occurs mostly in individuals of age 30–60 years and associated with mutations in amyloid precursor protein (APP) or presenilin (PS1 and PS2) genes, while sporadic AD mainly affects persons after 65 years of age and associated with mutations in apolipoprotein E4 isoform (apoE4) IR dysfunction, etc. Clinical interpretation of AD basically involves progressive deterioration in capabilities of memory, language, calculation, judgment, and behavior. AD is associated with disruption of mitochondrial function, calcium homeostasis, hormonal balance, and increased oxidative stress and neuroinflammation. Animal model has played a major role in

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Animal Models of Neuropathic Pain

Vanita Rani, Karamjeet Kaur, Vir Vikram Sharma
and Rahul Deshmukh

1 Introduction

In the recent history of neuromodulation period over half a century, the proof-based medical subspecialty is made. Its benefits are verified by improved pain relief, functional status, and health-related quality of life and low demand for healthcare resources. Neuromodulation is based on the innovative idea that paresthesia-inducing electrical stimulation could be analgesic. Its historic basis originates from Melzack and Wall's gate control theory of pain proposed in 1965. Neuromodulation has given us complete access to the systems of pain modulation and helped to understand the pathophysiology of pain. Neuropathic pain can be a consequence of an uncommon learning process which is associated with mal-adaptive plasticity of the central as well as peripheral nervous system. Various modifications of the peripheral nervous system have been defined in animal models of neuropathic pain, but their relation with human neuropathy symptoms are not fully understood. Mainly, neuropathic pain arises from injured myelinated fibers, abnormal activity in non-injured fibers, and also due to the more expression of

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Animal Models of Tourette's Syndrome

Priya Jaswal, Harmanpreet Kaur and Rahul Deshmukh

1 Introduction

Tics are defined as non-rhythmic, involuntary, and rapid movements or sounds. Approximately 15% of children experience during their growth and development a transient tic condition, without the need of medical treatment, with one or few tics that mostly disappear within less than 1 year. The transient tic condition differs from chronic tic disorder in terms of severity and time course, as in the latter the motor or vocal tics are present for more than 1 year. Tourette's syndrome (TS), the most severe tic disorder, is a childhood-onset condition consisting of multiple motor and at least one phonic tic for duration longer than 1 year. Tourette's syndrome was first described by the French neurologist Gilles de la Tourette in 1885. TS was thought to be rare, but recent epidemiological studies have shown prevalence of about 0.3–1%. Tourette's syndrome is a neuropsychiatric disorder which is characterized by motor and vocal tics. Motor tics are sudden, repetitive, stereotyped movements involving facial twitching, eye blinking, and movements related to head and shoulder, whereas phonic tics are related to sounds generated by moving air with the help of nose, mouth, or throat (e.g., coughing and throat clearing) as well as repeating syllables, words, or phrase. Severity of tics usually peaks between

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Animal Models of Multiple Sclerosis (MS)

Shubhangi Gupta, Sanpreet Kour and Rahul Deshmukh

1 Introduction

Multiple sclerosis is the chronic autoimmune disorder of the sensory system coordinated against its own particular myelin antigens. It is the basic incapacitating neurological illness influencing generally youth and grown-ups between the age of 20 and 40 years. Myelin is a protein that makes up the myelin sheath around the nerve fibers (axons). The myelin cells are called as oligodendrocytes which are the main ground for disease initiation. The term multiple sclerosis is related to formation of scar tissues or plaques or lesions in particular areas of the brain, especially the white matter. Seven decades of research, propose cause behind the disease is exposure to environmental pathogenic organism leads to activation of autoreactive T-cells that recognize CNS autoantigens which led to development of inflammatory reactions and demyelination. It is additionally known to be an inflammatory disease of the white matter portrayed by dynamic and broad deterioration of the myelin sheath and axonal points in neuron, leading to progressive paralysis of hind-limb. The myelin in the oligodendrocytes–myelin–axon unit of the CNS protects and nourishes the axon and increases the cross-sectional diameter of the nerve axon which regulates conduction. This integrally coordinated unit is disturbed due to multiple sclerosis. In MS, decreased axonal density and volume in plaque affected areas as well as in normal appearing CNS tissue contribute to atrophy of brain and spinal cord which lead to permanent disability.

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Commonly Used Laboratory Anaesthetics

Shubhangi Gupta, Rajat Bhardwaj and Rahul Deshmukh

1 Introduction

Anaesthetics are the drug that induces temporary state of unconsciousness, loss of senses in order to carry out surgical procedures. Anaesthetics are used during tests and surgical operations to prevent pain and discomfort and enable a wide range of medical procedures to be performed on patients. Analgesia is the absence of pain in response to stimulation that would normally be painful. An analgesic drugs act at the level of the central nervous system or at the peripheral site of inflammation to diminish or block pain signals.

At cellular level, the main function of anaesthetics is to inhibit synaptic transmission by reducing transmitter release and inhibition of transmitter action or reduction of the excitability of the post-synaptic cell or by blocking axonal conduction. For a drug to be useful as an anaesthetic, it should be readily controllable, so that induction and recovery are rapid, allowing the level of anaesthesia to be adjusted as required during the course of operation. Anaesthetic drugs are usually given in combination with analgesics or sedatives in order to achieve full anaesthesia. For anaesthetic drugs, the duration of action has not been provided. Duration of anaesthesia is influenced by the drugs used, strain, age, sex, body weight, procedure performed and the amount of stimulus during the procedure

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Analysis of Heterogeneity Characteristics for Heterogeneous WSNs

Sukhwinder Sharma ✉, Rakesh Kumar Bansal & Savina Bansal

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Abstract

Heterogeneity aims to prolong the effective lifetime of WSNs. A network becomes energy heterogeneous when nodes with dissimilar initial energy are deployed. Energy heterogeneity of a WSN is represented by two heterogeneity characteristics- fraction of heterogeneous nodes and additional energy factor between nodes at different energy levels. This paper aims to analyze the impact of energy heterogeneity on WSNs to draw relationship between heterogeneity characteristics and stability period. Well known clustering techniques specially designed for heterogeneous WSNs like SEP, DEEC, DDEEC and HEC are evaluated and analyzed for different values of heterogeneity characteristic parameters. Results clearly indicate the need of having more number of advanced nodes with lesser additional energy as compared to lesser number of advanced nodes having higher additional energy for the network having same total energy. It will certainly bring attention of researchers towards importance of heterogeneity characteristics while designing clustering techniques for WSNs.

Keywords

Clustering **Energy** **Heterogeneity** **Stability period** **Wireless sensor network**

Effect of Process Parameters of Fused Deposition Modeling and Vapour Smoothing on Surface Properties of ABS Replicas for Biomedical Applications

Jasgurpreet Singh Chohan, Rupinder Singh, and Kamaljit Singh Boparai

1 Surface Finishing Techniques for FDM Parts

Recently, the rapid casting of biomedical implants has become matter of interest for many researchers as this technology allows development of fast, cost effective and tailor-made implants based on patient data to meet specific clinical and geometrical constraints [1–3]. However, the poor surface finish of FDM parts appears to be massive barrier against its functionality for rapid casting applications. The surface roughness, surface hardness and dimensional accuracy of FDM patterns have significant impact on surface quality of final castings [4]. Although the fact that poor surface finish of FDM parts could not be completely eliminated but different techniques have been developed to improve surface quality of FDM parts which are further divided into pre-processing and post-processing finishing techniques (Fig. 1).

1.1 Pre-processing Techniques of Surface Finishing

The angle of orientation or deposition angle can be altered with respect to machine co-ordinate system in CAD model to achieve desired objectives [5]. Generally, it is focussed on minimum cost, time, support material usage and most importantly the surface finish required on specific plane. Kattethota and Henderson [6] initially

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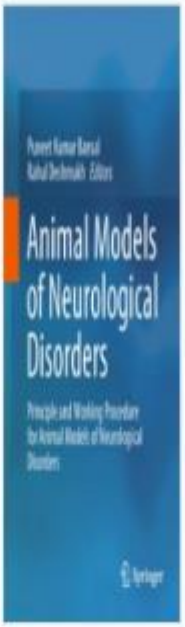

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Animal Models of Neurological Disorders

Principle and Working Procedure for Animal Models of Neurological Disorders

Editors (view affiliations)

Puneet Kumar Bansal, Rahul Deshmukh

Introduces undergraduate, postgraduate and research students to the different animal models for studying neurological disorders

Discusses different types of animal models of neurological disorders, the working principle, experimental protocols, different doses of toxins and includes diagrammatical representations

Provides insights into the pathophysiology of neurological disorders

Discusses in detail specific procedures for the induction of neurological disorders so they can be easily reproduced in the laboratory

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Research Article

Low-Stress Mechanical Properties of Wool-Cotton Blended Fabrics

H. C. Meena, D. B. Shakyawar & R. K. Varshney

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ABSTRACT

Hand-spun and hand-woven textiles made of natural fibers are known as khadi fabrics. Khadi fabrics are known for their luxury, excellent handle, and comfort properties. These properties can not be obtained using the methods employed for machine-made textiles. The fabric handle is associated with low-stress mechanical properties. In this work, the low-stress mechanical properties of wool-cotton blended khadi fabrics are studied and the effect of different blend proportions of wool fibers and yarn count on the fabric properties is investigated. The combination of different wool varieties was spun using a hand-operated spinning machine (charkha) and used as weft, while the various cotton-wool blends were employed as warp. A total of 27 types of wool-cotton khadi fabrics were woven on a handloom. The low-stress mechanical properties were measured using the SiroFAST system. It was found that the extensibility, formability, shear rigidity, bending rigidity, relaxation shrinkage, and hygral expansions of fabrics were influenced by the proportions of wool blend/mix and yarn linear density. The shear and bending rigidity of wool-cotton fabric are significantly influenced by the wool content in wool-cotton blended warp yarn as well as the proportion of AM wool in weft yarn ($p < .001$). From a formability point of view, wool-cotton fabrics perform well during garment manufacturing irrespective of a wool type. Relaxation Shrinkage in wool-cotton fabric is higher in warp wise than weft wise and increases with increasing the amount of wool for each type of fabric. The wool dominant fabric has higher hygral expansion in the weft direction than the warp direction.

Zinc Phthalocyanine Nanowires based Flexible Sensor For Room Temperature Cl_2 Detection

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Abstract. We have fabricated highly sensitive and Cl_2 selective flexible sensor by depositing solution processed zinc phthalocyanine nanowires onto the flexible PET substrate and studied its Cl_2 sensing characteristics in Cl_2 concentration range 5-1500 ppb. The flexible sensor has a minimum detection limit as low as 5 ppb of Cl_2 and response as high as 550% within 10 seconds. Interestingly, the sensor exhibited enhanced and faster response kinetics under bending conditions. The gas sensing mechanism of sensor has been discussed on the basis of XPS and Raman spectroscopic studies which revealed that zinc ions were the preferred sites for Cl_2 interactions.

INTRODUCTION

Flexible gas sensors have shown their great potential for environmental monitoring in the recent years due to their characteristics like flexibility, softness, space saving and lightweightness etc. There have been an increasing number of reports on organic as well as inorganic films deposited on flexible substrates for their applications in chemical sensors. Most of the flexible sensors reported in literature are based upon semiconducting oxides, inorganic materials and their composites [1]. However, they generally require high operational temperature which limits their application for room temperature gas detection. Besides it, most of these materials have drawback of lack of selectivity at room temperature [2]. On the other hand, organic materials like phthalocyanines have shown their potential as room temperature gas sensors and it has also been demonstrated that bending stress significantly improved the NH_3 sensing characteristics of cobalt phthalocyanine films deposited on flexible BOPET substrates [3]. Recently, phthalocyanine based nanostructures have shown their potential as highly sensitive and selective room temperature ppb level Cl_2 sensors [4-6]. Keeping these facts into consideration, we have fabricated gas sensor by depositing solution processed nanowires (NWs) of substituted zinc phthalocyanine (Zn (II) 1,4,8,11,15,18,22,25-octabutoxy-29H,31H-phthalocyanine)) over the flexible polyethylene terephthalate (PET) substrate. We have selected substituted zinc phthalocyanine molecule due to its solubility in organic solvents and low steric hindrance of the side chains which provides an ideal balance between the solubility and intermolecular π-π stacking for the molecule [5]. It has been demonstrated that these NWs were highly selective and sensitive towards Cl_2 with minimum detection as low as 5 ppb. Cl_2 sensing characteristics of NWs sensor showed a drastic improvement under bending conditions.

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Pulmonary Lesion Detection and Staging from CT Images Using Watershed Algorithm

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***Abstract*— Nowadays, various image processing methods are broadly being used as a part of the biomedical zones. It is crucial to diagnose the disease and to classify the specific stage for the radiologists to give reasonable remedial to the patients. Lung cancer is the most widely recognized known cancer among individuals, which can be delegated little cell and non-little cell. In this paper, we have proposed a model for the detection of pulmonary lesions at the initial and advanced stages of lung disease on CT (Computed Tomography) images. The proposed framework consists of four stages; change of RGB to grey scale image, smoothing will be performed using median filter to lessen the effect of noise from images, segmentation will be performed using thresholding and watershed techniques and after that the features are extracted for processed image. A framework has been tested with 12,645 images, a dataset of 50 patients. We have noticed that the proposed model perform better than already existing techniques and performance of this model is zero false positive acceptances.**

Keywords- Cell; Computed Tomography; Image Enhancement; Lung; Segmentation.

I. INTRODUCTION

Lung cancer is a deadly and most normal leading reason for the cause of deaths around the world. It might create in light of hereditary inclination, abnormal gene mutation which builds the patient's vulnerabilities to cancer-causing stimuli, for example, cigarette smoking, radon gas or different cancer-causing agents. Out of which smoking is the key guideline to contaminate the lungs. There were around 1.69 billion deaths brought about because of lung disease, as indicated by the World Health Organization (WHO). The American Cancer Society (ACS) has evaluated the events of lung disease for 2017 in the United States as; near about 222,500 new cases, out of which 116,990 will be for men and 105,510 will be for women. What's more, near about 155,870 deaths from lung growth, out of which 84,590 will be in men and 71,280 will be for women [1]. Lung carcinoma another name for lung cancer is characterized among little cell and non-little cell. Non-Small Cell Lung Cancer (NSCLC) can be recognized with the proposed model by scanning CT images. There are different frameworks accessible to recognize the infected nodule inside the lung zone, yet likewise we have attempted to accomplish the suitable phase of cancer by using different feature extraction techniques. The proposed model consists of pre-preparing, segmentation, feature extraction and classification of risk stage. The proposed framework is presented by using different image processing techniques. Image processing in the field of medical science is formally known as medical imaging. Various techniques of image processing are being used with medical sciences as to detect and examine the foundation of the infection or issue of the patients. Cancer is a terrible disease which is crucial to detect in early stages, so that specialists or experts to manage the patients and analyze the disease timely. Image processing is also called as imaging science is the handling of images by using a few strategies, operations and methods. There are different operations can be executed as sharpening, image smoothing, image enhancement, image segmentation and so forth. In the planned framework the CT scanned image is the input for the model, the picture is then pre-processed, segmentation is performed after pre-preparing, Feature are extracted by using distinct properties and by diagnosing these properties, classification of stages is assessed. The public dataset has been used for training the model which is obtained from public lung imaging library. Database contains a number of CT scan images that highlight a hefty portion of the key issues in measuring infected nodules or clusters in the lung. The model has the functionality to upload image for detection. The proposed framework has been tested with public dataset provided by VIA and I-ELCAP. It comprises of images of 50 patients caught in single relax.

II. RELATED WORK

Penedo et al. [2] have presented an automatic CAD system for radiographic images of the thorax using artificial neural network based approach. The proposed system is intended for detecting nodules in the early or initial stages. The curvature peak space has been exhibited for order of different anatomical structures. Werghi et al. [3] have proposed techniques for sputum cell detection in their initial stages of lung disease. The detection has been proposed by using Bayesian classification, by using thresholding approach and histograms. By observing colour quantization in bigger histograms, the cell detection is performed. The mean shift technique and k-mean clustering is used for the segmentation of sputum cell. Taher et al. [4] have presented a CAD system for early lung cancer detection based on analysis of sputum colour images. The artificial neural network and support vector machine classification techniques have been used for training and testing the system. Different parameters are used for performance analysis such as sensitivity, precision, specificity and accuracy. The ROC (receiver operating characteristic) curve has been used for the assessment purpose. A set of different features like nucleus to cytoplasm ratio, curvature, eigenvectors ratio and density of nucleus region were extracted from nucleus region. 97% high accuracy was evaluated by SVM over ANN technique.

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Design and Analysis of Renewable Energy Based Hybrid Model for RemoteApplications

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P. Anand ; A. H. Quadri ; S. K. Bath ; M. Rizwan ; Narendra Kumar All Authors

Abstract
Document Sections
I. Introduction
II. Hybrid System Modelling Methodology
III. Simulation Results and Discussion
IV. Conclusion
Authors
Figures
References
Keywords
Metrics

Abstract:
India got independence in 1947, but after more than seven decades many of the villages are not either fully electrified or not connected with grid supply. Additionally, there are many rural households in the country still not have access to electricity. Further, In order to meet this challenge and fulfill the Government of India's mission "Power to All" by 2019, it is necessary to generate the electrical power by harnessing locally available green energy resources (GES). In the present study, design, techno-economical analysis and comparison of off grid and grid connected hybrid models comprising of GES viz. solar, biomass and biogas have been carried out to get feasible solution. Hybrid model comprising of solar, biomass, biogas along with battery in grid connected mode has been proposed for selected area due to least net present cost and cost of energy with minimum green house gas (GHG) emission.

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Multiple-Input Multiple-Output (MIMO) Cognitive Radio User Selection Using Channel State Information at Transmitter (CSIT)

Publisher: IEEE Cite This PDF

Rattandeep Kaur ; Dinesh Kumar All Authors

Abstract
Document Sections
I. Introduction
II. Cognitive Radio and Software Defined Radio (SDR)
III. Motivation
IV. Multiple-Input Multiple-Output (MIMO) Systems
V. Result & Discussion
Show Full Outline
Authors
Figures
References
Keywords
Metrics

Abstract:
In this work, the execution of an underlay's different information numerous yield Multiple Input and Multiple Output (MIMO) intellectual radio framework is logically examined. Specifically, the auxiliary transmitter works in a spatial multiplexing transmission mode, while a zero-driving locator is utilized at the optional recipient. Moreover, the optional framework is meddled by single-receiving Main Primary User (PUs). They tend to ponder client decision courses for a different info various yield (MIMO) Cognitive radio (CR) downlink organize, wherever the r-reception apparatus underlay CR auxiliary clients (SUs) exist with a Primary User (PU), and each one terminal zone unit furnished with numerous receiving wires. Two fundamental circumstances zone unit considered: (1) the t-receiving wire mental element base station (CBS) has incredible or incomplete channel state information at the transmitter (CSIT) from the CBS to the PU beneficiary (RX), and (2) the CBS has totally no PU CSIT. For these circumstances, we have a tendency to propose and survey different SU decision conspires that zone unit pertinent to each best-exertion PU impedance moderation and difficult obstruction temperature limitations. The creator has a tendency to furthermore consider helpful range detecting by abuse the FPT technique in MU-MIMO CR framework. Agreeable range detecting will enhance the execution of gathering. Besides, with the specific helpful range detecting approach, high probability of discovery will be accomplished once the framework is underneath notice requirement. Amid this work very surprising issues zone unit settled with the help of different destinations and acquiring distinctive parameters. In this work planned Multiple SU and PU and CBS transmission framework and getting the 80% transmission precision.

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Corporate Debt Restructuring: A Case of Arvind Mills

Pritpal Singh Bhullar[1] and Pomy Bansal[2]

ABSTRACT

Sustainable cash flows for firm is essential to distinctively synergize the business in the VUCA (Volatile, Uncertain, Complex and Ambiguous) world. With increasing strains in the economy which is surely going to reflect in increasing bad loans in banks' accounts, companies with thousands of crores of loans are set to knock on the doors of banks to get their loans rolled over. Corporate need funds for impactful alignment of various business operations to cultivate benefits efficiently. Funds raised through debt have been considered as cheaper option by the business houses as it does not dilute the ownership in firms. Sometime firms indulge so deeply into debt that it becomes a challenge for them to come out from debt. Corporate Debt Restructuring (CDR) has emerged as an important tool for debt management in current scenario. The CDR mechanism has helped corporates to come out of debt trap. Many Indian pharmaceutical and bio technology firms, faced financial crisis during 2008 to 2010. To revive its business company adopted Corporate Debt Restructuring (CDR) route. Arvind Mills also implemented CDR successfully to rejuvenate its business. Arvind Mills set an example of implementing CDR successfully to defend their businesses during financial distress and transform into top profitable ventures of the country.

INTRODUCTION

"Debt is like any other trap, easy enough to get into, but hard enough to get out of."

Henry Wheeler Shaw

In current fragile business environment, the survival of companies has become a daunting task with increase in competitive intensity among firms. Predicting cash flow with certainty has become a tough nut to crack with rise in volatility in current market scenario. The emerging need of sustainable cash flow has been transformed into high level noise inside the board meetings of the

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Writer Identification System for Handwritten Gurmukhi Characters: Study of Different Feature-Classifier Combinations

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Abstract

In this paper, we are exploring various features and classifiers for writer identification in light of Gurmukhi text handwriting. The identification of the writers based on a piece of handwriting is a challenging task for pattern recognition. The writer identification framework proposed in this paper includes diverse stages like image preprocessing, feature extraction, training, and classification. The framework first prepares a skeleton of the character so that meaningful data about the handwriting of writers can be extracted. The feature extraction stage incorporates various plans, namely, zoning, diagonal, transition, intersection and open end points, centroid, the horizontal peak extent, the vertical peak extent, parabola curve fitting, and power curve fitting based features. In order to assess the prominence of these features, we have used four classification techniques, namely, Naive Bayes, Decision Tree, Random Forest and AdaBoostM1. For experimental results, we have collected 49,000 samples from 70 different writers. In this work, maximum accuracy of 81.75% has been obtained with centroid features and AdaBoostM1 classifier.

Keywords

Feature extraction Classification Naive bayes Decision tree Random forest AdaBoostM1

Chapter 4
Investigating the Architectural Manifestations of Path and Place in Sacred Sikh Architecture

Ripu Daman Singh, Jatinder Kaur, and Prabhjot Kaur

Abstract The paradigm of sacred architecture, since early times, has been guided by elements of path and place making. Previous researches have shown that there are specific architectural elements which correspond to the path and place making in sacred spaces. This paper aims to analyze the path- and place-making elements proposed in previous researches and develop a comprehensive list of the same for sacred Sikh architecture, i.e., Gurdwaras. The list, thus developed, shall help to rediscover the underlying pattern of path and place making which contribute toward the sacredness in Sikh architecture. The study also helps to rediscover the architectural elements responsible for the uniqueness of these memorable spaces and which are reminders of events and experiences that took place in them. Few prominent historical Indian Gurdwaras have been included in the study for identifying the architectural elements signifying the presence of path and place making. The study concludes with the summary of architectural manifestations of sacred Sikh architecture which correspond to the categories of path and place.

Keywords Sacred Sikh architecture • Gurdwaras • Path and place • Architectural manifestations

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Chapter 14
Bansal Haveli at Bathinda: Sustainability Paradigm

Bhupinder Pal Singh Dhot, Harpreet Sandhu, and Gaurav Jindal

Abstract India has divergent climatic zones. This situation has always posed challenges in the construction of buildings according to the typical climate of different regions. Traditional buildings by and large followed sustainable approach through relevant design strategies, whereas most of the modern buildings are found unable to adapt to the extremes of climate and are inherently energy consuming. *Bansal Haveli* at Bathinda in the Malwa region of Punjab (India) has been discovered as one of the best examples of traditional residential architecture. It truly conforms to the concept of sustainability as it has been evolved in response to the lifestyles and climatic conditions of the region and by using local materials. Thermal comfort has been achieved through design strategies like internal courtyards, orientation, thermal mass, and solar gain. Courtyards provide sufficient measure of comfort to its inhabitants by means of passive cooling system. Most of the rooms are directly connected to its courtyards which act as a transition space between the interior and exterior. No mechanical device is being used in the interiors to heat up or to cool the Haveli. Air flow and shading are the two components which help in regulating the temperature, keeping it warm in winter and cool in summer. Objective of the present research paper was to analyze the built form and characteristic features of the Haveli. It was found environment friendly, energy efficient, and gifted with spaces in harmony with the criteria of sustainability.

In this research paper, sustainability has been taken to mean the climate responsiveness of Bansal Haveli serving the aim of comfortable living.

Keywords Haveli • Courtyard • Environment friendly • Sustainable • Thermal comfort

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FDM is one of the latest techniques of AM which is finding widespread applications. Lot of research work has been carried out on identifying the parameters that affect the properties of the final product. Research has taken place to optimize these parameters and development of mathematical models, so that the manufactured component has good dimensional accuracy, good surface finish with minimum use of material and at a low cost with less manufacturing time. Research has also been done to find out the applications of FDM in various fields like medicine, rapid casting and rapid tooling applications. The development of new materials for FDM which are cost effective and having specific desired properties, has been studied and it is seen that new composite materials have been developed which are mixed in a certain proportion after cryogenic grinding of nylon based binders, the filler material, plasticizers, surfactants and certain other additives like stabilizers. The present research aims at developing a new composite material having ferromagnetic characteristics without the use of plasticizers and surfactants without the use of cryogenic grinding.

NEW METAL/POLYMER MATERIALS FOR RT

Garg

Harish Kumar Garg

Development of new metal/polymer materials for rapid tooling using FDM

The author is an Associate Professor in the Department of Mechanical Engineering in Giani Zail Singh Campus College of Engineering and Technology , Bathinda(India). The author has more than 20 research papers in journals of international repute and has guided Ph.D and M Tech. students.

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PROCEEDINGS PAPER

Experimental Investigations for Wear Properties of Rapid Tooling With Nano Scale Fillers for Grinding Applications

Kamaljit Singh Boparai, Rupinder Singh

+ Author Information

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This work is focused on the experimental investigations for wear properties of rapid tooling with nano scale fillers for grinding applications. The rapid tooling has been prepared by using composite material feed stock filament (consisting of Nylon6 as a binder, reinforced with biocompatible nano scaled Al_2O_3 particles on fused deposition modeling (FDM) for the development of grinding wheel having customized wear resistant properties. A comparative study has been conducted under dry sliding conditions in order to understand the tribological characteristics of FDM prints of composite material and commercially used acrylonitrile butadiene styrene (ABS) material. This study also highlights the various wear mechanisms (such as adhesive, fatigue and abrasive) encountered with newly prepared composite material while grinding. The FDM printed parts of proposed composite material feedstock filament are more suitable for grinding applications especially in clinical dentistry.

Volume Subject Area: Materials

Topics: Fillers (Materials), Grinding, Rapid tooling, Wear, Composite materials, Feedstock, Adhesives, Binders (Materials), Biocompatibility, Fatigue, Grinding wheels, Modeling, Particulate

Chapter 15
Scope of Biogeography-Based Optimization for Economic Load Dispatch and Multi-Objective Unit Commitment Problem

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ABSTRACT

Biogeography Based Optimization (BBO) algorithm is a population-based algorithm based on biogeography concept, which uses the idea of the migration strategy of animals or other spices for solving optimization problems. Biogeography Based Optimization algorithm has a simple procedure to find the optimal solution for the non-smooth and non-convex problems through the steps of migration and mutation. This research chapter presents the solution to Economic Load Dispatch Problem for IEEE 3, 4, 6 and 10-unit generating model using Biogeography Based Optimization algorithm. It also presents the mathematical formulation of scalar and multi-objective unit commitment problem, which is a further extension of economic load dispatch problem.

INTRODUCTION

In the modern power system networks, there are various generating resources like thermal, hydro, nuclear etc. Also, the load demand varies during a day and attains different peak values. Thus, it is required to decide which generating unit to turn on and at what time it is needed in the power system network and also the sequence in which the units must be shut down keeping in mind the cost effectiveness of turning on and shutting down of respective units. The entire process of computing and making these decisions is known as unit commitment (UC). The unit which is decided or scheduled to be connected to the power system network, as and when required, is known to be committed unit. Unit commitment

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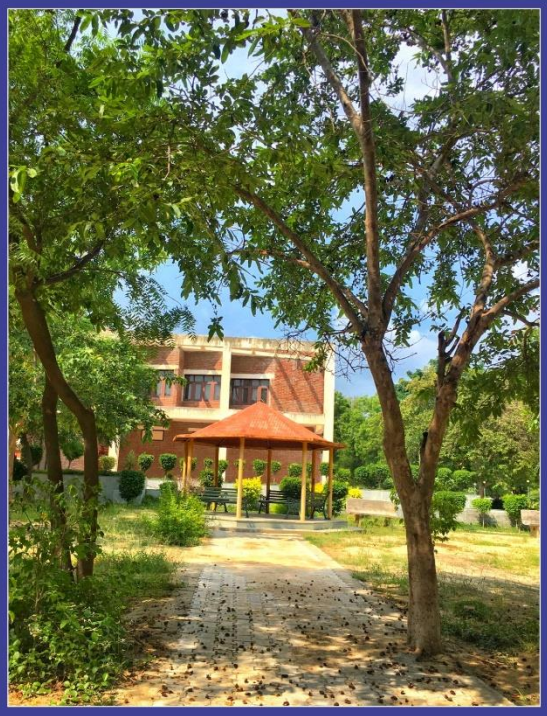

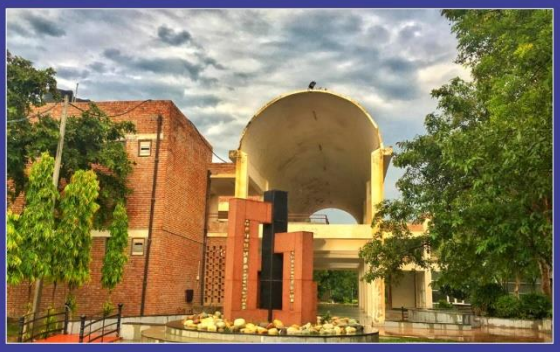

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