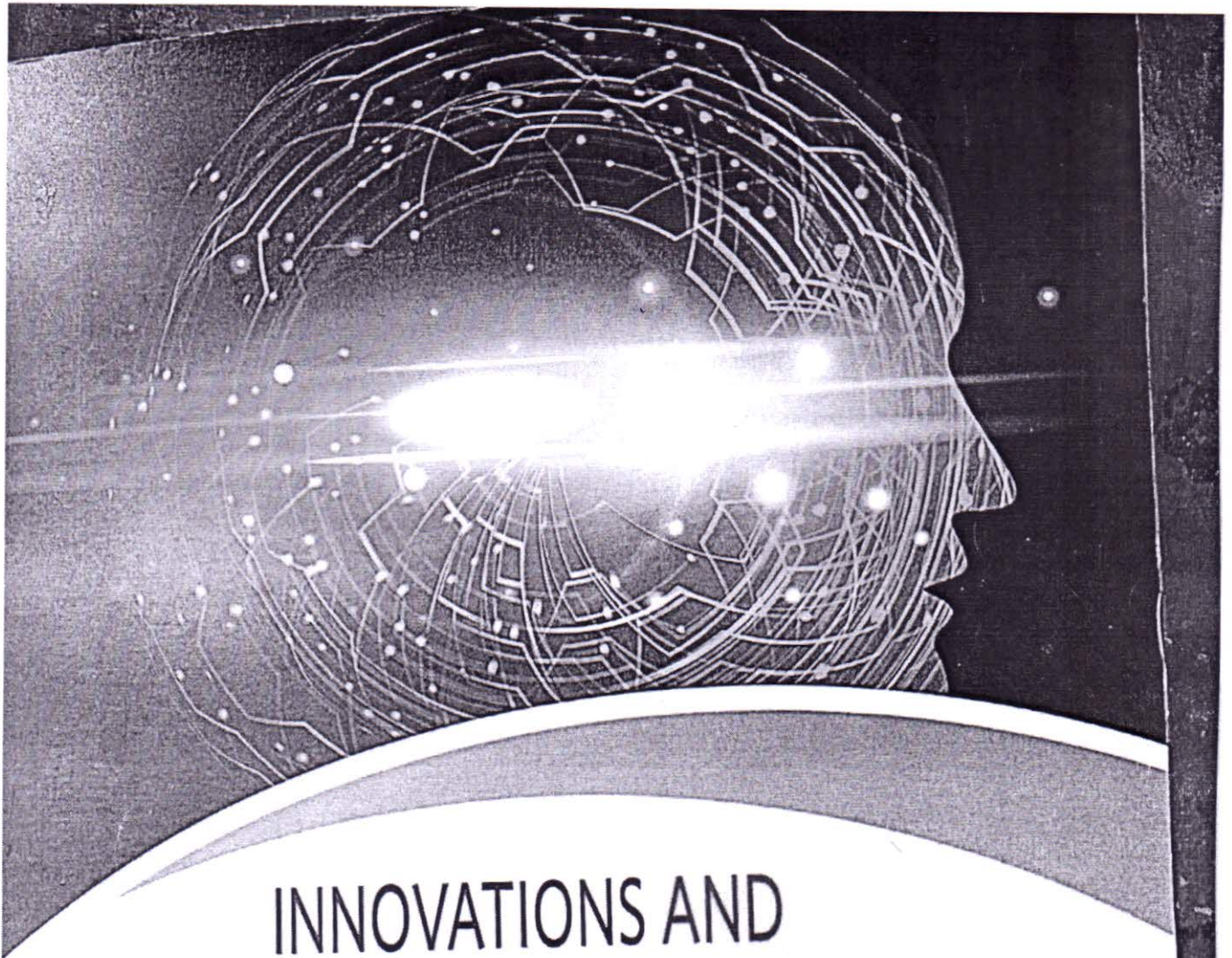


CRITERIA III: RESEARCH, INNOVATION AND EXTENSION

3.2.2: NUMBER OF BOOKS AND CHAPTERS IN EDITED VOLUMES/BOOKS PUBLISHED AND PAPERS PUBLISHED IN NATIONAL/ INTERNATIONAL CONFERENCE PROCEEDINGS

DATA COLLECTION YEAR FOR ASSESSMENT

2020-21



INNOVATIONS AND FUTURISTIC PRACTICES IN BUSINESS AND MANAGEMENT

Editors
Shefali Nandan
Ajai Kr. Singhal

B L O O M S B U R Y

Innovations and Futuristic Practices in Business and Management

Editors

Shefali Nandan

Ajai Kr. Singhal

B L O O M S B U R Y
NEW DELHI • LONDON • OXFORD • NEW YORK • SYDNEY

BLOOMSBURY INDIA
Bloomsbury Publishing India Pvt. Ltd
Second Floor, LSC Building No. 4, DDA Complex, Pocket C – 6 & 7,
Vasant Kunj, New Delhi 110070

BLOOMSBURY, BLOOMSBURY PRIME and the Diana logo are
trademarks of Bloomsbury Publishing Plc

First published in 2020

Copyright © Shefali Nandan & Ajai Kr. Singhal, 2020

Shefali Nandan & Ajai Kr. Singhal have asserted their right under the Indian
Copyright Act to be identified as the Author of this work

All rights reserved. No part of this publication may be reproduced or transmitted
in any form or by any means, electronic or mechanical, including photocopying,
recording, or any information storage or retrieval system, without prior
permission in writing from the publishers

Bloomsbury Publishing Plc does not have any control over,
or responsibility for, any third-party websites referred to or in this book.
All internet addresses given in this book were correct at the time of going
to press. The author and publisher regret any inconvenience caused if
addresses have changed or sites have ceased to exist, but can accept
no responsibility for any such changes

ISBN: 978-93-90358-02-1

2 4 6 8 10 9 7 5 3 1

Typeset by PrepSol
Printed and bound in India by Replika Press Pvt Ltd

To find out more about our authors and books, visit
www.bloomsbury.com and sign up for our newsletters

7. Scanning Product Life Cycle for Revival of Ageing Brands through Brand Revitalization
Tarunija Chandra and Vibhuti Tripathi 103

8. Online Behavioural Advertising and Consumer Response: A Conceptual Framework
Shraddha Jain and HC Purohit 117

Futuristic Practices at Workplace

9. Conceptualizing Change Implementation Effectiveness through Human Resource Management Interventions
Richa Singh and Geetika 132

10. Employee Wellness: Global Challenges and Innovations
Nidhi Mayur 151

11. Role of Corporate Social Responsibility in Employer Branding: A Conceptual Overview
Sameeksha Madan 162

12. Changing Workplace: Understanding Quality of Work Life from the perspective of Emotional Intelligence
Suchitra Srivastava and Sandhya Sinha 185

Innovations for Societal Change

13. Analysis of Human Development Index as an approach towards Understanding Societal Development with Special Reference to India
Tanuj Nandan, Pravin Kumar Agrawal and Ashutosh Pratap Singh 202

14. Analysing the Effectiveness of Health Communication towards Menstrual Hygiene Practices
Sanchita Mehrotra and Areena Zainub Mirza 218

Innovative Entrepreneurship and Gender Roles

15. Shenergy: A Case study of a Social Entrepreneurial Venture
Sonu Dabral 232

16. The Role of Entrepreneurship Education in Promoting Venture Creation: A Study of Young Graduates in Nepal
Bhim Bahadur Khadka 242

12

CHAPTER

Changing Workplace: Understanding Quality of Work Life from the Perspective of Emotional Intelligence

Suchitra Srivastava¹ and Sandhya Sinha²

¹Faculty, Jagannath International Management School, New Delhi

E-mail: suchitra.srivastava@yahoo.co.in

²Faculty, Maharishi University of Information and Technology, Lucknow

E-mail: sandhyasinha.mgmt@gmail.com

Abstract

The workplace has witnessed a multitude of changes since the early twentieth century. From the yesteryears, when the organizations were mere production units concerned with productivity and efficiency, organizations are now perceived as dynamic entities rich with the knowledge, expertise and experiences of its employees. These are systems where the thoughts, aspirations, values and beliefs of the individuals are intertwined so as to lead to the fulfillment of both the individual's and the organization's goals. Considerable research has been carried out in the past where a positive QWL (quality of work life) has led to higher productivity at the workplace, coupled with lower turnover and absenteeism. The present study explores a possible relationship between QWL and the EI (emotional intelligence). It is descriptive in nature and relies on the past research done in the field of QWL and EI. It is based on the premise that if a relationship between the two is established, the organizations will have to pay more attention while formulating their HR policies. The EI of the employees will have to be assessed and harnessed to ensure a satisfied workforce delivering excellent results for the organizations.

Keywords: Emotional intelligence, Quality of work life, Organization

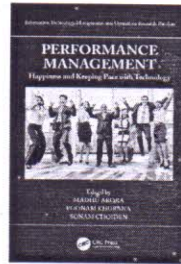
Search for keywords, authors, titles, ISBN



[Advanced Search \(/search/advance-search?context=ubx\)](#)

< Performance Management (<https://www.taylorfrancis.com/books/performance-management/10.1201/9781003089308?refId=f183dd11-f918-4ed1-9865-2f27e3d37679>)

Chapter



An Empirical Work on HR Practices within the Aviation Industry of India

By *Vaishali Sharma, Garima Sachdeva, Prabhjot Kaur*

Book [Performance Management \(https://www.taylorfrancis.com/books/performance-management/10.1201/9781003089308?refId=f183dd11-f918-4ed1-9865-2f27e3d37679\)](https://www.taylorfrancis.com/books/performance-management/10.1201/9781003089308?refId=f183dd11-f918-4ed1-9865-2f27e3d37679)

Edition 1st Edition
First Published 2020
Imprint CRC Press
Pages 12
eBook ISBN 9781003089308

ABSTRACT

Close this message to accept cookies and our [Terms and Conditions \(/terms-and-conditions\)](#) We use cookies to distinguish you from other users and to provide you with a better experience on our websites. Find out how to manage your cookie settings [here \(/cookie-policy\)](#)





(/)

Policies



Journals



Corporate



Help & Contact



Connect with us



(<https://www.linkedin.com/company/taylor-&-francis-group/>)



(<https://twitter.com/tandfnewsroom?lang=en>)



(<https://www.facebook.com/TaylorandFrancisGroup/>)



(<https://www.youtube.com/user/TaylorandFrancisGroup/>)

Registered in England & Wales No. 3099067
5 Howick Place | London | SW1P 1WG

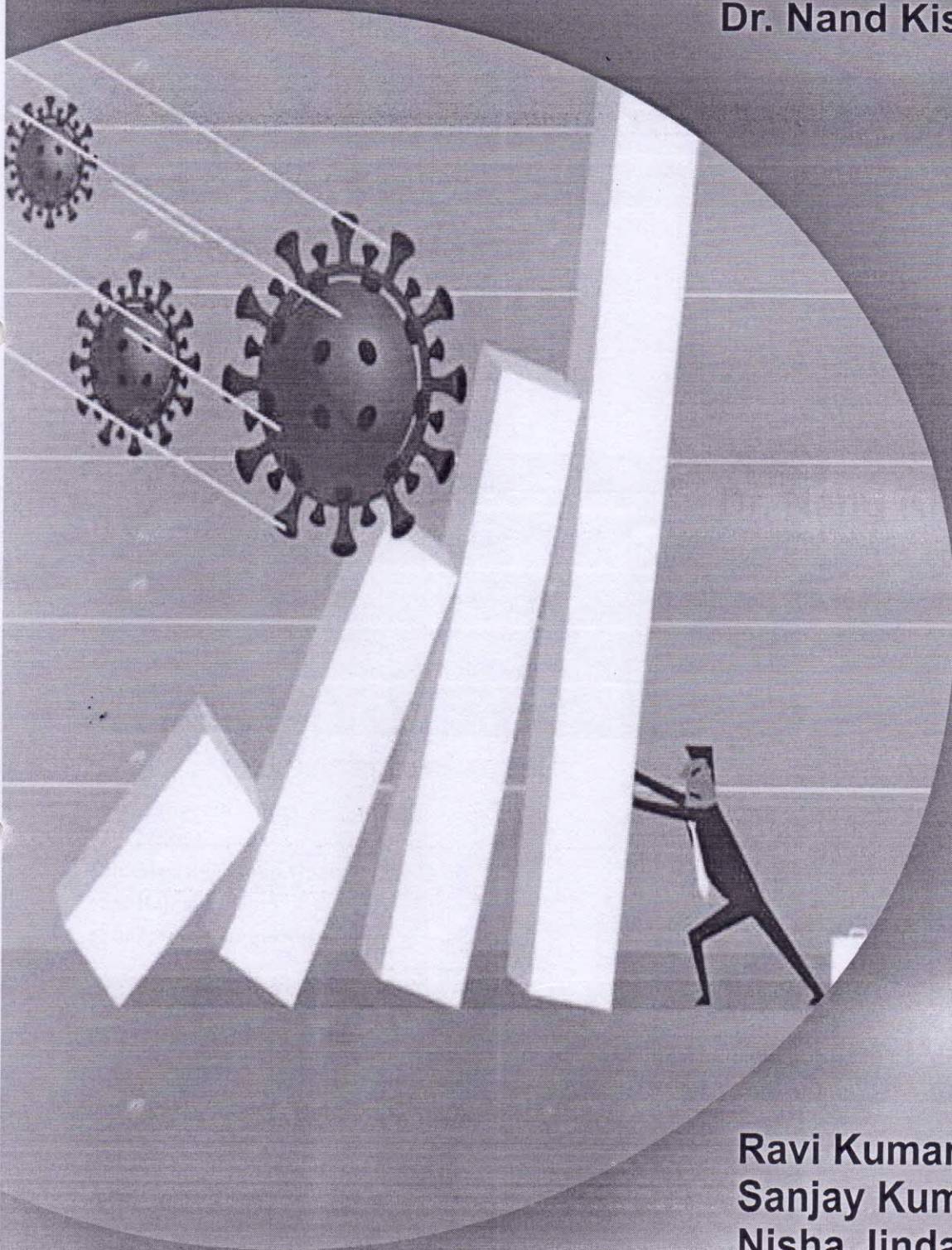
© 2021 Informa UK Limited

Close this message to accept cookies and our [Terms and Conditions](#). We use cookies to distinguish you from other users and to provide you with a better experience on our websites. Find out how to manage your cookie settings [here](#).



Global Economic Order in the Post - COVID - 19 Era: Challenges, Opportunities and Strategies

Foreword by:
Dr. Nand Kishore Garg



**Ravi Kumar Gupta
Sanjay Kumar Mangla
Nisha Jindal**

Maharaja Agrasen University Publication



Maharaja Agrasen Technical Education Society (MATES), New Delhi

Dr. Nand Kishore Garg

- Founder Chairman & Chief Advisor, MATES &
- Chancellor, Maharaja Agrasen University, Baddi, HP, India

Chairman, MATES - Sh. Vineet Kumar Gupta

Executive Chairman, MATES - Sh. S. P. Aggarwal, IAS

Sr. Vice Chairman, MATES - Sh. Manoj Singhal

Vice Chairmen, MATES

- Sh. Sunder Lal Goel
- Er. Ravindra K. Gupta
- Sh. S. P. Goel
- Sh. Umesh Kr. Gupta
- Sh. Kailash Chand Bansal
- Sh. Jagdish Mittal
- Prof. (Dr.) M. L. Goyal (Academics)
- Er. Sumer Chand Tayal

General Secretary - Er. T. R. Garg

Joint General Secretary - Sh. Mohan Garg

Treasurer - Sh. O. P. Goel

Co - Treasurer - Sh. Anand Kr. Gupta

Secretaries, MATES

- Sh. Satish Garg
- Sh. Gian C. Aggarwal
- Ms. Sangeeta Gupta
- Sh. Nitin Gupta
- Sh. Madan Mohan Goel
- Sh. Rajnish Gupta
- Sh. Avinash Aggarwal

CEO, MATES - Sh. Gyanendra Srivastava, IAS

Advisors, MATES

- Prof. (Dr.) Muneesh Kumar
- Prof. (Dr.) G. P. Govil
- Prof. (Dr.) I. M. Kapahi
- Prof. (Dr.) N.K. Kakkar

Heads of Sister Institutions

- Sh. B. L. Mahajan, Director, Maharaja Agrasen Global School
- Sh. Suresh Gupta, Project In-Charge, Maharaja Agrasen University, HP
- Prof. (Dr.) R. K. Gupta, Vice Chancellor, Maharaja Agrasen University, HP
- Prof. (Dr.) Neelam Sharma, Director, MAIT
- Prof. (Dr.) S. S. Deswal, Dean, MAIT



*Global Economic Order in the Post-Covid-19 Era:
Challenges, Opportunities and Strategies*

Foreword By

Dr Nand Kishore Garg

Edited By

**Prof. (Dr.) Ravi Kumar Gupta
Dr. Sanjay Kumar Mangla
Dr. Nisha Jindal**

Published By

Maharaja Agrasen University Publication

Editors: *Ravi Kumar Gupta, Sanjay Kumar Mangla and Nisha Jindal*

First Edition: 2020

Copyright © Editors

Published By:

Maharaja Agrasen University Publication
c/o Maharaja Agrasen Technical Education Society
bktyagi001@gmail.com

ISBN No. 978-81-942547-3-7

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, resold, hired out or otherwise circulated without the publisher's prior written consent, in any form of binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser and without limiting the rights under copyrights reserved above. No part of this book may be reproduced, stored in any retrieval system or transmitted in any form or by any means (electronic, mechanical, photocopying, recording or otherwise), without the prior written permission of the copyright owner.

Cover Design:

Shri B. M. Gupta Graphics
15, Basant Gaon, New Delhi-110057
Tel: 9718116171

Publisher's Registered office:

Maharaja Agrasen Technical Education Society (Regd.)
PSP Area, Maharaja Agrasen Chowk,
Sector-22, Rohini, New Delhi- 110086
Tel: 8448186935
Fax: 91-11-27582095
E-mail: mait@mait.ac.in
Website: www.mait.ac.in

Price: Rs. 400/-

Disclaimer: The publisher of this book has no responsibility of any kind of legal issues related to this book. The authors/editors of this book are fully responsible for the copyrights, plagiarisms and any other kind of issues, related to the content matter inside this book. In case of any issue with the content or any other matter relayed to this book, please contact/notify to the authors/editors for corrective action. Editors can be reached at: **sam211285@gmail.com**

18	Impact of COVID-19 Pandemic on FMCG Sector Companies in India <i>-Neethu Bijoy</i>	142
19	Person with Disabilities: Challenges and Concerns during COVID-19 <i>-Ambreen Iftikhar & Vishal Soodan</i>	151
20	Coronavirus: Reshaping in Various Aspects <i>-Tanya Kumar & Ranbir Singh</i>	157
21	A Cross-Sectional Study on Statistical Analysis of COVID-19 for Asian Countries <i>-Arjun Gupta & Chinu Gupta</i>	164
22	Impact of COVID-19 on Different Spheres of Activity in India <i>-Suchitra Srivastava</i>	171 ✓
23	Review of Recent Electronic Manufacturing Schemes Announced by MeitY and COVID-19 Pandemic <i>-Amit Kumar</i>	183
24	Conducting School Exam during COVID-19: A Study of SSLC Examination in Karnatka <i>-A. C. Devananda</i>	190
25	Plight of Indian Migrant Workers During COVID-19 Pandemic: An Invisible India <i>-Ridhima Sharma & Timcy Sachdeva</i>	195
26	Vocal for Local : A Move towards De-Gobalization in Pre and Post COVID-19 Period <i>-Avinash Kulkarni & Sheebu Nair</i>	201
27	Impact of COVID-19 on Indian Economy & the Global Challenges in Post Corona World <i>-Yogesh Garg & Rajinder Rawat</i>	207
28	Impact of COVID-19 on Labour Laws-Are Labourers being Treated as Oblivion's Curse <i>-Swarnendu Chatterjee & Aarushi Agarwal</i>	219
29	Post COVID-19 Prediction of Indian Industry <i>-Puja Kaura</i>	225
30	A Hindsight Research on POST-COVID-19 Challenges on Indian Financial and Business Sector <i>-Sunakshi Mahajan</i>	231
31	E-Commerce is the Best Solution for Indian Business During Pandemic: Review <i>-Shubham Chavriya & Chandni Bisht</i>	236
32	COVID-19 and Legal Issues in India <i>-Manjula Raghav</i>	246
33	Food & Beverage Industry Analysis in COVID-19 and Future Growth <i>-Anshuman Narang, Anupam Nehra & Aanchal</i>	251
34	COVID-19: Challenges and Opportunities for Indian Start-UPS <i>-Swapn Sarkar</i>	259
35	COVID-19: The Role of IB School Librarian to Support Curriculum <i>-Reena Singh Rogrigues</i>	265
36	Gateway of Opportunities in India during COVID-19 <i>-Jatin Kumar & Aayushi Dhawan</i>	273
37	Nationwide Lockdown in Response to COVID-19 and its Impact on Indian Stock Market and Pharmaceutical Sector: An Econometric Testing <i>-Rajesh R</i>	283
38	Developing Hybrid Model of Online Courts and Mediation for India Through Cross Countries Study <i>-Ananta Aggarwal & Kajal Mittal</i>	291

Chapter 22

Impact of COVID-19 on Different Spheres of Activity in India

-Suchitra Srivastava

Abstract

The outbreak of COVID19, which has its roots in China, has left the entire world shattered. There is no vaccine and advanced treatment available at present and it is very contagious. WHO has declared this disease, which severely hampers the breathing function as a pandemic. It has caused more deaths as compared to World Wars I and II combined and the number of casualties are rising each day. It has caused panic and concerns for human health around the world.

This chaos and massive loss of life has affected almost all the spheres of our lives. The lockdowns imposed to contain the deadly virus have brought several industries to a grinding halt. The manufacturing units have been shut down, the service industries have stalled operations and the agriculture and allied industries have witnessed the worst.

The present paper is an attempt to critically examine the effects of the novel corona virus on the different facets of human life and several important sectors of the economy. It also reflects upon certain measures adopted the different sectors to cope up with the current new world order. The objective is to serve as an eye opener to the policy makers and the people to work collectively to recuperate from the aftermath of the pandemic.

Keywords: COVID 19, economy, manufacturing, service industry, agriculture, education

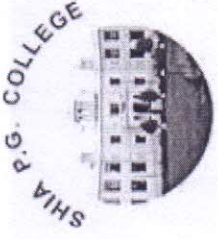
Introduction

The ruthless attack of the new corona virus began in December 2019 from Wuhan city of China. The symptoms of the infection range from common cold to more severe diseases like Middle East Respiratory Syndrome abbreviated as (MERS-CoV) and Severe Acute Respiratory Syndrome commonly known as (SARS-CoV). It continued to spread unabated across the world, not sparing even the most advanced nations such as US, UK, Germany, France, Spain, Italy etc. Till date, the world has recorded 4.9 million cases with about 323k fatalities and still increasing numbers. The world which had become a global village with super connectivity has been forced to maintain distance. Its integrated work practices, satellite communication and affordable air travel have been suddenly caught in the grip of the deadly virus. The only method to contain this deadly disease is through social distancing, frequent sanitizing and building immunity. In order to prevent the community transmission of the virus, Nations have announced lockdowns disrupting the production, supply chains, logistics, operations of various companies. The consumers have also reversed their consumption patterns owing to salary delays, loss in income and even layoffs. Numerous migrant labourers in India have been forced to leave their place of work due to the prevailing uncertainty. The effect of this virus has proven to be devastating. India is no different in this case. Ever since lockdown has been announced, the economy has come to a standstill with production, operations, and value chains being disrupted. According to Vijayakumar et.al. (2020), "The impact of this large-scale outbreak is however much beyond just 'a medical disorder', affecting the society and community-life at large".

According to ET (May, 2020), COVID 19 could cost 135 million jobs, push 120 million people into poverty in India. The report added that about 40 million people would be forced into abject poverty.



EduCon 2020



Certificate of Presentation

This is to certify that

MS. SUCHITRA SRIVASTAVA

of Jagannath International Management School, Vasant Kunj, New Delhi,
has participated & presented a paper titled
"EDUCATION-THE RAY OF LIGHT" in the International Conference on
Education4.0: Opportunities and Challenges organised by
IMHRC & Shia PG College held on 2nd August 2020

S. Talib

DR S TALIB
Director IMHRC

Kashif Hasan

DR KASHIF HASAN
Organising Secretary

Aparish

DR A P MASHI
Organising Secretary

Prof MoHD MIYAN

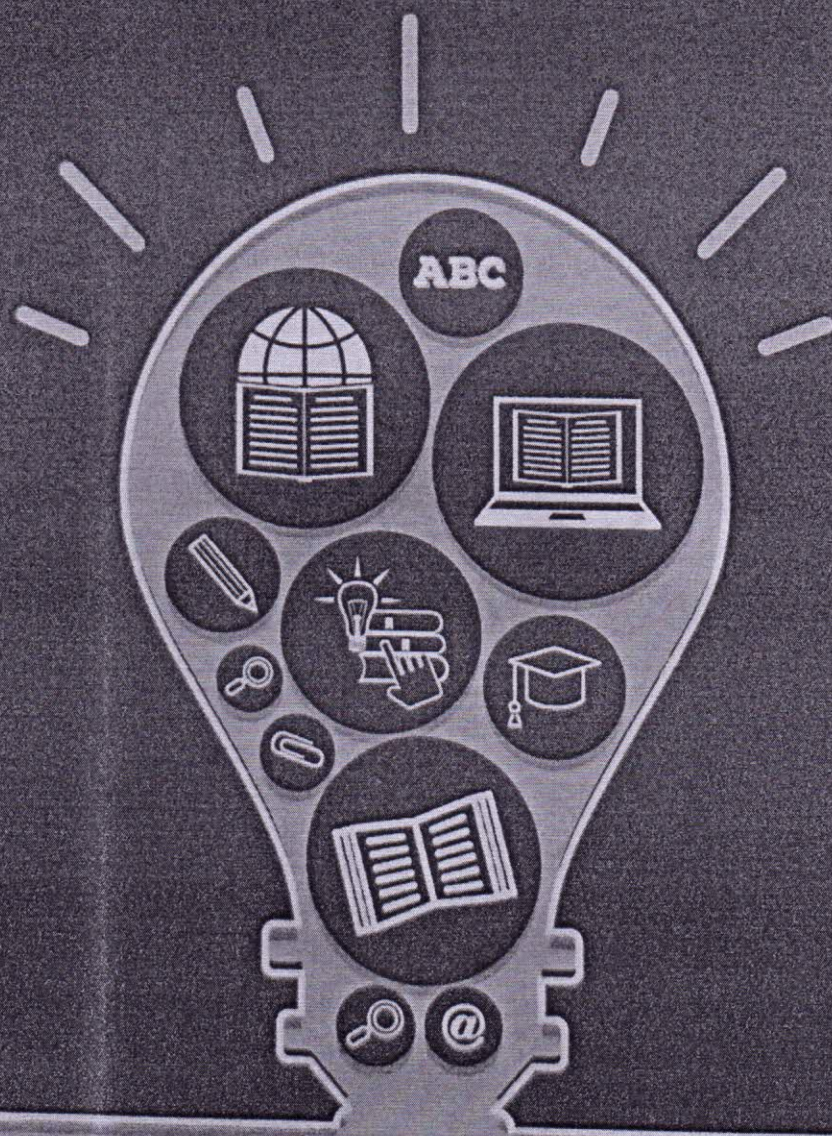
PROF MOHD MIYAN
Principal Shia PG College



Education 4.0

OPPORTUNITIES & CHALLENGES

(Proceedings of EduCon 2020 International Conference)



S. S. H. KAZMI
MOHD ALI


PROGRESSIVE
PUBLICATIONS

Education 4.0

OPPORTUNITIES & CHALLENGES

(Proceedings of EduCon 2020 International Conference)

Editors:

**SYED SAJID HUSAIN KAZMI
MOHD ALI**



**PROGRESSIVE
PUBLICATIONS**

www.ipyfindia.com

ALL RIGHTS RESERVED. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage or retrieval system, without prior permission in writing from the copyright holder.

No responsibility for loss caused to any individual or organization acting on or refraining from action as a result of the material in this publication can be accepted by Progressive Publications or editors.

© Editors

ISBN 978-81-941592-9-2

Edition March, 2021

Price: ₹850/-

Published by:

PROGRESSIVE PUBLICATIONS

Lucknow (U.P.), India

Contact: 8090499048, 8960882732, 9696797832

Email: progpublication@gmail.com

Website: www.ipyfindia.com

The publisher believes that the contents of this book do not violate any existing copyright/intellectual property of others in any manner whatsoever.

Contents

S. No.	Chapter Title and Author(s)	Page No.
1.	Promoting Pro-Environmental Behaviour among University Students: An agenda for Education 4.0 Aditi Dubey and Jyotsana Shukla	1-15
2.	Inclusion: A Global Gesture Shalini	16-27
3.	The Role of Religious Education in Peace Building Process and Social Change Shakeel Ahmad Wani & Sayed Aaqib Qadri	28-37
4.	Education: The Ray of Light Suchitra Srivastava	38-52
5.	The Impact of Tourette's Syndrome on Academic Performance and Peer Relationship Navdeep Saluja	53-65
6.	Empathy as a Classroom Value: A Key to Social and Emotional Growth in Early Childhood Education Smita Ghosh	66-75
7.	Digitization in Education: Role and challenges ahead Dr. Shaheena Akhter	76-93

- | | | |
|-----|--|---------|
| 8. | Teacher Effectiveness and Work Motivation among Secondary School Teachers in Gwalior District, Madhya Pradesh, India
Sartaj Ahmad Bhat | 94-107 |
| 9. | Education 4.0: The New-Future Ready Education
Sajitha Rajan | 108-113 |
| 10. | Sustainable Development and Education 4.0
Rahat Parveen | 114-122 |
| 11. | Economic Reforms in Higher Education
Sandeepa Kaur Bhatiani | 123-129 |
| 12. | New Education Policy 2020 and Financing of Higher Education in India
Syed Sajid Husain Kazmi & Mohd Ali | 130-139 |
| 13. | Academic Stress and it's Management: A hurdle in Education 4.0
Garima Singh & Akanksha Singh | 140-156 |
| 14. | Happiness and Anxiety among adults under quarantine due to outbreak of Covid Pandemic
Rosemol Thamby | 157-186 |
| 15. | Marketing: An Analysis of Indian Youth Green Apparel Buying Behaviour
Farah Tazeen & Prof. N.H. Mullick | 187-202 |
| 16. | Author's Profile | 203-211 |

Chapter - 4

Education: The Ray of Light

Suchitra Srivastava

Introduction

In the words of Swami Vivekananda "Education is the manifestation of the perfection already in man." One of the most renowned scientists of the world, Einstein, believed that "Education is what remains after one has forgotten what one has learned in school."

In ancient India, the concept of Gurukul was present which imparted experiential learning. The wards of kings and saints who came from different backgrounds were required to lead a life of austerity with meagre resources and strict discipline at the abode of learning. During that period, they imbibed the knowledge and skills that would help them to lead fulfilling lives while discharging their duties in their designated domains.

Such is the concept of schools, where students coming from different backgrounds adorn "uniforms" and visit the abodes of learning or schools. We have adopted measures to endorse uniformity, but we need to examine whether we are delivering the right skills and knowledge to our pupils to make them capable enough to lead fulfilling lives. We need to evaluate whether our methods are justifying the ends we strive to achieve.

XVII International Conference

Management Strategies

Retrieval, Resilience & Re-modelling in Post COVID World

22 May 2021

Editors

Dr. Ravi K. Dhar

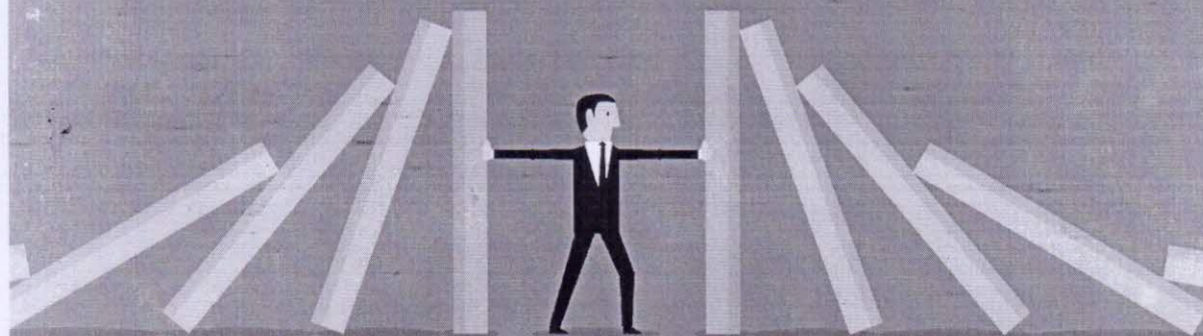
Dr. Nidhi Gupta

Dr. Anu Bhardwaj

Dr. Shruti Bhuttani

Dr. Seema Wadhawan

Mr. Vipul Singh



Organized by
IQAC & Department of Management Studies
JIMS, Vasant Kunj, Delhi

A.K. PUBLICATIONS

B-61/E-1, Gali No. 14, Jagatpuri Ext.
Shahdra, Delhi-110 093 (India)
Ph.: +91-9868320502, +91-9999157638
E-mail: akpubs2008@yahoo.com

*Management Strategies: Retrieval, Resilience & Remodelling in a Post
COVID World*

© Editors

First Edition 2021

ISBN 978-93-88465-

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by means, electronic, mechanical, photo copying, recording or otherwise, without the prior permission of the publisher.

PRINTED IN INDIA

Published by A.K. Publications and Printed at Global Printers, Delhi.

Contents

Message from the Chairman

Message from the Director

Message from Head, Department of Management Studies

Message from Key Note Speaker

Preface

1. **To Compare and Contrast Economic Impact Due to Covid-19 on Primary, Secondary and Tertiary Sector** 1
Vidhi Juneja & Dr. Shruti Bluttani
2. **Breaking Down Aggregation Theory: Creating Virtual Monopolies?** 15
Nazreen Sheikh & Deep Biswas
3. **Post Covid Era Impact of Work from Home on Work Force and Workspace** 26
Dr. Madhu Sharma & Uznain
4. **Impact of Covid-19 on Stress Level of Employees at Workplace** 33
Sukanya Kumari & Dr. Sunita Verma
5. **A Study of E-recruitment: Impact on the Workforce and Workplace with Respect to a Pandemic Situation: Covid 19** 41
Prof. Shubhangi S. Chavan & Prof. Tejashri A. Phalke
6. **Linking Human Resource Management Practices with Employees' Intention to Stay-Evidence from Indian IT Sector** 51
Pratibha & Rupali Arora
7. **Impact of Covid-19 on Social Recruiting in India** 66
Rounak Goel, Simran Tyagi & Pooja Madaan

8. **Talent Management in a Post Covid World: Reimagining the Landscape of Talent** 76
Dr. Suman Dahiya & Rupa Rath
9. **Empowering Tribal Children Through Online Learning and Digital Initiative During Covid-19 Crisis: A Case of Chhattisgarh State** 84
Dr. Jyoti Verma & Dr. Sambit Kumar Padli
10. **Managing Workforce Challenges Amid Covid 19 Crisis** 100
Medha Gupta & Dr. Rupali Arora
11. **The Impact of Post Covid -19 on Employees Workforce - With Special Reference to the Manufacturing Industry** 109
Prof. Sushmitha Abhishek Rao
12. **Recruitment & Selection Process Study with Analysis on FMCG Firm Dabur India in North Region** 120
Urvashi & Dr. R.P. Sharma
13. **Impact of Covid 19 on E-commerce: A Bibliometric Analysis** 141
Dr. Rupinder Katoch & Anushika Nayek, Lokesh Kumar, Mohammad Asif
14. **To Study Effectiveness and Skill of Primary Teachers on Online Teaching and Learning During Covid-19 Pandemic Period: A Case Study in Pune** 156
Dr. Janardan Pawar, Dr. Ashvini Shende & Mrs. Sarika Thakared
15. **Undergraduate and Post-Graduate Teaching-Learning in the Covid Pandemic: Case Study of Indira College, Pune** 168
Dr. Janardan Pawar, Ms. Sarita Byagar & Mrs. Madhavi Avhankar
16. **Analysis of Fraud in the Indian Banking Sector: A Study of Yes Bank and Canara Bank** 179
Ms. Kashish Karkra & Dr. Priya Vij
17. **Awareness of Rural Consumers Regarding Green FMCG Products: A Study on Bhiwani District** 197
Srishti & Dr. Sunita Bhartwal
18. **A Study on Post Covid-19 Era Impact on Social Media Marketing** 210
Ms. Bhargavi Maheshwari & Dr. Pragati Chauhan
19. **Intersection of Battle and Marketing Strategies From Tribal Warfare a Qualitative Study Using Thematic Analysis** 226
Mr. Debapriyo Nag, Dr. C. L. Sharma & Dr. Neeraj Saxena

(xvi)

- | | |
|--|------------|
| 20. Post Covid Era Impact on Marketing Activities | 236 |
| <i>Ms. Sakshi Chhabra & Ms. Sonia Gandhi</i> | |
| 21. Impact of Covid 19 on Online Shopping | 250 |
| <i>Dr. Shruti Bhuttani & Drishti Arora</i> | |
| 22. A Study on Customers Shifting to Online Dealings and Changing Marketing Strategies: 2015-2021 | 261 |
| <i>Anshula Singh & Anushka Singh</i> | |
| 23. Marketing in the Era of Covid 19 | 267 |
| <i>Ms. Smita & Ms. Priyanka Attri</i> | |
| 24. Leveraging Social Media Influencers for Customer Engagement and Brand Perception | 278 |
| <i>Rahul Jaitly</i> | |

To Compare and Contrast Economic Impact Due to Covid-19 on Primary, Secondary and Tertiary Sector

Vidhi Juneja* & Dr. Shruti Bhuttani**

ABSTRACT

This paper focuses on the economic impact due to Covid-19 on primary, secondary, and tertiary sectors. The GDP chart comparison has been made between the years 2019-20 and 2020-21. Financial highlights and the economic impact have been covered in this paper. Covid-19 has affected various sectors in different ways causing a downfall in the economy and budget plans. Constraints and various policy measures have been discussed in this paper. Reforms must go on to enable India realize its potential growth and erase the adverse impact of the pandemic. India's mature policy response to the 'once-in-a-century' crisis provides important lessons for democracies to avoid myopic policy-making and demonstrates benefits of focusing on long-term gains. Calibrated financial and money related help was given, padding the powerless during the lockdown and boosting utilization and speculation while opening and an ideal money related arrangement guaranteed bountiful liquidity and quick alleviation to indebted individuals while unclogging money related strategy transmission. Government utilization and net fares padded the development from jumping further down, though speculation and private utilization pulled it down.

Keywords: COVID-19, GDP, Primary Sector, Secondary Sector, Tertiary Sector, Economic Impact, Policies, Changes

* Student, Christ University, Bengaluru, E-mail: vidhi.1399.juneja@gmail.com

** Assistant Professor, Jagannath International Management School, New Delhi, E-mail: shruti.bhuttani@jagannath.org

Breaking Down Aggregation Theory: Creating Virtual Monopolies?

Nazreen Sheikh* & Deep Biswas**

ABSTRACT

What is Aggregation Theory? What does it have to do with the major tech companies of the world? Why are consumer tech companies valued so highly in public markets, yet own little physical assets compared to their traditional 'asset heavy' competitors? Why do tech companies capture value much more efficiently than traditional incumbents? Are investors overvaluing tech companies, or are there underlying characteristics powering this value capture? One can argue that Aggregation Theory is behind the success of all such tech giants such as Amazon, Google, Facebook, and the likes. But if that is the case, then why is it so hard to replicate? Starting with the broader definition of aggregation theory, you may know the term. The theory was initially coined in 2015. It's a common trait of today's tech giants and a big reason for their dominance. But it's still one of the most under-exposed phenomena in an otherwise buzzword-happy business environment. Understanding Aggregation Theory is crucial to the success of any business which is looking to make it big on the internet. It is a simple enough concept to understand but difficult enough to replicate on a large scale to make it work for you. The underlying principles remain the same, yet they have evolved over the years. The framework explains how big tech companies leverage the internet to reshape value-chains, gain power and extract profits. It explains why users are flocking on Facebook despite privacy concerns, why Google keeps facing class action law suits and still doesn't seem to care much and why Amazon tries to sell everything to everyone, and generally succeeds in doing so. On the

* Student BBA, Jagannath International Management School, Vasant Kunj, Delhi, E-mail: naazu2000@gmail.com

** Assistant Professor, Jagannath International Management School, Vasant Kunj, Delhi, E-mail: biswas.deep@ymail.com

Impact of Covid-19 on Social Recruiting in India

Rounak Goel*, Simran Tyagi** & Pooja Madaan***

ABSTRACT

Covid 19 has been a very tough phase for everyone. In the pandemic, when authorities announced restrictions to minimize the spread of Covid 19, those companies who wanted more human capital were left with no choice but to modify their recruitment process to adapt the social distancing norms. To ensure the safety and health of their recruiters and potential employees, as well as their families, companies have been switching to virtual recruitment. The paper will illustrate the new and changing recruitment process and how different businesses are trying to adapt themselves to it. How the outlook has changed for the recruiters when using virtual recruitment process and how do they identify and employ talent online. In this paper main emphasis has been laid on that how employers and job seekers are using different social media platforms as a common platform to satisfy their needs. Now social networking sites are emerging as an effective medium for candidates to find jobs as per their qualifications. Recruiters are also effectively using these sites to connect with potential candidates to ease out the recruitment process. How earlier these platforms were not used so much but now the boom in their use and their changing roles in the whole recruitment system can also be seen. The aforementioned are the focus topics of the paper.

Keywords: *Recruitment, Virtual Recruitment, Social media, Social Recruiting.*

* Student, Jagannath International Management School,
E-mail: rounakgoel9@gmail.com

** Student, Jagannath International Management School,
E-mail: simrantyagi2819@gmail.com

*** Assistant Professor, Jagannath International Management School,
E-mail: pooja.madaan@jagannath.org

Post Covid Era Impact on Marketing Activities

Ms. Sakshi Chhabra & Ms. Sonia Gandhi***

ABSTRACT

The economic recession caused by the recent pandemic has considerably affected consumer looking and media habits and altered firms' promoting activities and performance. Marketing research over the last decades has provided insight into how economic recessions have an effect on shopper behavior and the way companies ought to alter their marketing mix activities in response to these macro-economic contractions. In this paper, I overview the associated advertising literature and show that recessionary intervals might also additionally offer possibilities for entrepreneurs to develop their brand's market place percentage with the proper advertising-blend spending management.

Keywords: Marketing, research, Economic, recession, COVID-19.

I. Introduction

Marketing in post COVID-19 era: A guide for marketing managers

Marketing in post COVID-19 era: A manual for advertising managers the recent corona virus (COVID-19) has compelled immediate, far-reaching life-style shifts for consumers across the world, and those adjustments are possibly to live past the duration of pandemic itself. The international retail enterprise is experiencing an unprecedented disaster in the wake of the COVID-19 lockdown and its economic recession (ER).

France's economy, collectively with numerous different countries, is predicted to enjoy an ER as it might also additionally decrease via

* Student, Department of Management, Jagannath International Management School, E-mail: sakshichhabra1999@gmail.com

** Assistant Professor, Department of Management, Jagannath International Management School, E-mail: sonia.gandhi@jagannath.org

Impact of Covid 19 on Online Shopping

Dr. Shruti Bhuttani & Drishti Arora***

ABSTRACT

The pandemic had an influence on all aspects of life. Work from home generated a positive change in the pattern in online shopping prior to the lockdown. However, this could not be sustained for an extended period of time. The unexpected lockdown had a major effect on Indian online shopping and marketing patterns. Initially, the impact of Coronavirus on customer purchasing behavior, brand loyalty, and online resources was generally unknown. The primary goal of this research is to determine whether the coronavirus is causing people to buy online and whether they will continue to shop online after the pandemic has passed. This paper also seeks to ascertain how online shoppers respond to their shopping behavior during the Covid-19 period in terms of perceived benefits. And also intends to focus on various issues and perspectives in online marketing as a result of COVID-19. As physical surveys are impractical in this case, the data for this paper was gathered by distributing a questionnaire on social media among 40 people.

Keywords: COVID-19, online shopping, consumer buying behavior, perceived benefits, consumer perception

I. Introduction

The uncertainty of the world changing overnight left the world into difficult times. This pandemic is one of the most defining events that changed the life of millions. People just buy the goods that were essential and cut costs that were not necessary. Sales of

* Assistant Professor, Jagannath International Management School, New Delhi, E-mail: shruti.bhuttani@jagannath.org

** Student, Delhi Technical University, New Delhi, E-mail: drishtiarora2121@gmail.com

Marketing in the Era of Covid 19

Ms. Smita* & Ms. Priyanka Attrii**

ABSTRACT

COVID-19 pandemic has caused a worldwide internment that has short stop working core businesses and caused a worldwide recession. The economic recession caused by the recent pandemic has considerably affected client searching and media habits and altered firms' selling activities and performance. Since the COVID-19 pandemic has attacked the globe, it's become troublesome for marketers to breeze through. In today's atmosphere, unified channels and client service square measure a lot of necessary than ever, as non-essential businesses closed their doors to assist slow the unfold of Covid-19. This meant that retailers and shoppers alike had to pivot nightlong to a digital-only reality. Though there square measure several uncertainties regarding however the approaching time can impact the business and private lives of individuals, thus it's important to hunt solutions for each the spectrums to bring Associate in Nursing improvement within the future selling investments. Firms United Nations agency square measure the quickest and a lot of versatile in adapting to the new reality can have an enormous advantage within the market and can become business leaders the others will need to follow. The welcome business worldwide is among the hardest-hit industries from the COVID-19.

Lockdowns, social distancing, stay-at-home orders, travel and quality restrictions have resulted in temporary closure of the many welcome businesses and considerably weakened the demand for businesses that were allowed to still operate. Over the past few months, firms have had to quickly fits COVID-19. The primary step for several organizations was to stabilize operations and safeguard their own staff. From this position,

* BBA-1st Year, JIMS Vasant Kunj, New Delhi, E-mail: smitarai2828@gmail.com

** Assistant Professor, JIMS, Vasant Kunj, New Delhi, E-mail: priyankaattri27@gmail.com



Commerce and Management Association Lucknow

Certificate of Publication

This is to certify that chapter entitled "A Pilot Study On Instagram As A Platform For Social Media Marketing" authored by "Dr. Suchitra Srivastava, Associate Professor, Department of Management Studies, Jagannath International Management School, New Delhi, India" had been reviewed by the board and published in book "Future of Marketing: Trends And Changes" ISBN No. "978-93-5515-062-2" on 17/12/2021.

Heartly congratulations and appreciations from Commerce and Management Association.

Amit Verma

Dr. Amit Verma
Chief-Editor/Secretary

Emerging Paradigms in Management & Social Science



National Press Associates

EMERGING PARADIGMS IN MANAGEMENT & SOCIAL SCIENCE

EDITORS

Dr. Kavita A. Jain

Dr. Prabhjot Kaur ✓

ISBN: 978-93-90863-44-0



National Press Associates

New Delhi

Editors

Dr. Kavita A. Jain

Professor, Baba Mastnath University, Asthal Bohar, Rohtak

Dr. Prabhyot Kaur

Faculty, Netaji Subhash University of Technology, Dwarka, New Delhi

© 2021. All Rights Reserved. Selection & Editorial Matter, Editors & Authors.

All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means of electronic or mechanical including photocopy, recording or any information stored in a retrieval system, without the prior written permission of the publisher.

ISBN: 978-93-90863-44-0

Price: 1000/-

The responsibility for the facts or opinions expressed in the book is entirely of the authors. Neither the publisher nor the editors are responsible for the same.

Published By:

National Press Associates

Head Office: C-24, Ground Floor, Panchsheel Vihar, Malviya Nagar, New Delhi-110017, India

Regional Office: 79, GAD Nagar, Flower Enclave, Dugri, Ludhiana, Punjab-141013, India

Branch Office: C-104, Anuroop Society, Vartak Nagar, Thane (West)-400606, Maharashtra, India

Email: npublishing@gmail.com | www.npublishing.in

CONTENTS

1. COVID-19 AND ITS IMPACT ON E-COMMERCE <i>Sindu Menda , Madhuri Golla</i>	1
2. STUDY ON DIGITAL MARKETING TOOLS AND IMPULSE BUYING BEHAVIOUR IN FASHION INDUSTRY <i>Aditi. R. Khandelwal, Hiral Bhutalia</i>	7
3. THE CAUSES AND CURRENT STATUS OF YOUTH UNEMPLOYMENT IN INDIA <i>J. Suresh Kumar, D. Shobana</i>	14
4. ROLE OF RBI IN INDIAN ECONOMY <i>Ramshankar Varma</i>	24
5. WORK LIFE BALANCE AND ITS IMPACT AS A STRATEGIC HUMAN RESOURCE MANAGEMENT <i>Rajesh Kumar</i>	31
6. COVID-19 THREATS TO EDUCATION AND PSYCHOLOGY: CHALLENGES TO INDIAN STUDENTS <i>Saptarshi Mitra, Purbita Sanyal</i>	38
7. INDIAN BANKING SECTOR: ON A TURBULENT RIDE <i>Manpreet Kaur</i>	45
8. FINANCIAL IMPACT OF COVID-19 <i>Divya Gupta</i>	52
9. A PARADIGM SHIFT IN EDUCATION W.S.R. TO COVID-19 <i>Munisha</i>	56
10. EMERGING MARKETING TRENDS: A GLOBAL PERSPECTIVE <i>Priya Sachdeva</i>	60
11. STUDY ON AWARENESS TOWARDS E-COMMERCE AMONG COMMERCE STUDENTS AT HIGHER SECONDARY LEVEL- COIMBATORE DISTRICT <i>T. Sangeetha, R. Kumaresan</i>	68
12. EMERGING ISSUES OF HRM IN 21ST CENTURY: A THEORETICAL INVESTIGATION <i>Kamble Pravin Dinkar Meera</i>	74
13. AN ANALYTICAL STUDY ON THE EFFECT OF THE ANNOUNCEMENT OF UNION BUDGETS ON THE VARIOUS INDEXES IN INDIAN SHARE MARKET <i>Priyanka Ghosh</i>	80
14. EMERGING PATHWAYS ON FUTURE OF WORK: PERSPECTIVES AND IMPLICATION ON HUMAN RESROUCE MANAGEMENT BEYOND COVID-19 <i>Onyango Joseph O</i>	87
15. IMPACT OF SOCIAL MEDIA ON SCHOLASTIC ACHIEVEMENTS AMONG HIGHER SECONDARY STUDENTS <i>K. Jayakumar</i>	102

16. EMERGING ISSUES IN MARKETING <i>Chaya. R, Sharada Devi .K.G</i>	108
17. TOTAL QUALITY MANAGEMENT IN HIGHER EDUCATION <i>Archana Sharma</i>	115
18. MARKET RESEARCH: THE LANDSCAPE, METHODS, TRENDS AND CHALLENGES <i>Deepak Kumar</i>	134
19. THE ROLE OF COOPERATIVE SOCIETY FOR AGRICULTURAL MARKETING IN SIVSAGAR OF ASSAM <i>Pragyajyoti Boruah</i>	139
20. REASONING ABILITY AND RESEARCH ATTITUDE AMONG GRADUATES: A NEW LOOK <i>R. D. Padmavathy</i>	143
21. ADVERTISING & MEDIA – TRADITIONAL TO DIGITAL DISRUPTION <i>Arif Mohammad Khan, Deepak Kumar</i>	149
22. ISSUES IN HRM: CHALLENGES IN ACQUISITION OF HUMAN RESOURCE IN PANDEMIC <i>N. Meeran Mydheen</i>	155

FINANCIAL IMPACT OF COVID-19

**Divya Gupta*

**Assistant Professor in finance, Department of Management Studies, JIMS Vasant Kunj, New Delhi*

ABSTRACT

This paper emphasizes upon the unparalleled impact the Novel Coronavirus: COVID-19 has left on the economy and the implications such unending impacts will have on the economy, after taking a note of the impact the other epidemics and pandemics in history have had. The paper tries to bring out the probable impacts of COVID-19 on banking and insurance, government and public, financial markets, after taking cues from the various rich literature available.

Key Words: COVID-19, Financial Markets, Government and public

INTRODUCTION

COVID-19 pandemic has hit the world and we are now tragically acquainted with the severity of the loss that the countries world over have suffered due to the virus with over 9.95¹ million people affected, and 504,785² casualties world over and 528,859¹ people affected and 16487² casualties across India as on June 28, 2020. This seems to be the worst health and economic crisis in a century.

Apart from the human fatalities the other scary aspect to the pandemic is the financial fatalities the economies around the world are facing. At this time when the pandemic is still going strong, the final impact the pandemic can have on economies is still not completely known. But the whole scenario has generated a lot of interest in the financial breakdown that these disasters can cause.

The impact of the disease has been multidimensional starting from infection, death and loss of our loved ones to complete human agony in the form of loss of education (schools and colleges closed, although for a short run); acute global recession, leading to increase in indebtedness; corporate distress, leading to job loss; strain on financial systems, leading to less credit supply in economies and less investments by scared investors; mental stress, leading to lack of nutrition and less food intake thereby leading to reduced immunity levels.

1. <https://ourworldindata.org/covid-cases>
2. <https://www.worldometers.info/coronavirus/coronavirus-death-toll/>

All this makes it not just a pandemic but through the red eyes of COVID-19 the world is looking at a deeper economic crisis. The countries which were confident about the positive per capita income growth in the first quarter of the calendar year 2020 are depressed into negative per capita income growth even before the end of the second quarter. In a matter of months the economies have flipped, this tells us a lot about the magnitude of the disaster on the economies. This magnitude is somehow giving the mirror reflection of the Great Depression of 1930s, when almost all the wealth evaporated within a span of 10 years.

The strategies of Lockdown have proved to be a boon for the environment with forests, wildlife, aquatic life and humans alike experiencing the pure nature. But the same have been a bane for the economies. Industrial Production has gone down, services sector is also limping, unemployment rates have risen and consumers are not confident enough in today's scenario. All this will take a while for correction, the greater time it takes worse it will be for economies and we are still not sure till when the disease will stay with us and for how many years it will linger on with us, when will we find a reliable vaccine to keep this disease at bay.

ABOUT THE EDITORS



Dr. Kavita A. Jain is currently Professor at Baba Mastnath University in Department of Management and Commerce. Earlier she worked as Director in Vaish Institute of Management and Technology for more than seven years. She received masters degree in management and journalism & mass media. She has more than 24 years of industry, teaching and research experience. She has published many articles in reputed journals. She has been guiding Ph.D. students.



Dr. Prabhjot Kaur, MBA, NET, PhD (Management) Academician with more than 11 years' experience including 10 years of experience in Teaching Management Subjects in renowned institutes and about a year's experience of working with industry. Currently, Dr. Prabhjot Kaur is working as a faculty with Netaji Subhash University of Technology (NSUT), Delhi. She has written more than 25 Research Papers/articles/chapters in books, contributed and presented her papers in number of International and National conferences, seminars, workshops etc. She has served as Resource Person in various National Level FDPs (Faculty Development Programme) including AICTE Training and Learning (ATAL) Academy sponsored one-week online FDP on ROAD (Response Effectiveness, Organizing Self, Attitudinal Shift & Decision Making) organized by College of Management, SRMIST (Deemed to be University), Chennai. Also, she is the member of technical committees of various conferences.



Published By

NATIONAL PRESS ASSOCIATES

PUBLISHERS AND DISTRIBUTORS OF BOOKS AND JOURNALS

ADMIN OFFICE: C-24, GROUND FLOOR, PANCHSHEEL VIHAR, MALVIA NAGAR,
NEW DELHI- 110017 (INDIA)

REGIONAL OFFICE: 79, GURU ANGAD DEV NAGAR, FLOWER ENCLAVE, DUGRI,
LUDHIANA-141013 (PUNJAB), INDIA.

BRANCH OFFICE: C-104, ANUROOP SOCIETY, VARTAK NAGAR, THANE (WEST) -
400606, MUMBAI, MAHARASHTRA (INDIA)

E-MAIL: npapublishing@gmail.com

Website: www.npapublishing.in

ISBN 978-93-90863-44-0



9 789390 863440 >

Emerging Business Practices And Trends During COVID-19

Dr.Amit Verma

Assistant Professor,

Department of Commerce, Kalicharan PG College, Lucknow,
Uttar Pradesh, India

Dr.Satinder Kumar

Assistant Professor,

School of Management Studies, Punjabi University, Patiala,
Punjab, India



BOOK RIVERS
WE CREATE READERS

Copyright©: Authors

All Rights Reserved

No part of this publication may be reproduced, transmitted or stored in a retrieval system, in any form or by any means, electronic, mechanical, photocopying recording or otherwise, without the prior permission of the author.

Website: www.bookrivers.com

Place: Lucknow

Year: 2021

MRP: 499/-INR

ISBN: 978-93-90548-96-5

CONTENTS

1. Impact of ICT on Public and Business Administration in India During COVID-19 Pandemic 1-18
*Dr. Badruddin
2. Analysis of Impact of COVID-19 on Global Aviation Industry 19-29
*Dr. D. Y. Patil
**Dr. Kamini Khanna
3. Risk Management Lessons for Organisations in Pandemics & Other Black Swan Events 30-46
*Dr. Vivek Sharma
**Dr. Shiva Johri
4. Visual Communication And Trends in Art Business in The Pandemic COVID-19 47-60
*Prof. Priti Samyukta
5. Impact of COVID-19 on International Economy 61-70
*Dr. J. Tamilselvi
6. Emergence of Livestream As A Marketing And Communication Channel During COVID-19 71-85
*Dr. D. Rajasekar
**Mr. Sajid Marickar
7. Lockdown And Labour Migration 86-96
*Dr. A. Thilaha Dharmarajan
**U. Ezhilarasi

Industries During COVID-19

*Geetha V M

**Dr.S.Jayalakshmi

22. Proposed Solution for Challenges Faced By 314-341
Academicians While Teaching Online
During Pandemic

*Dr.Deepti Khanna

**Dr.Arpana Chaturvedi

23. COVID-19: Emerging Trends in Dental 342-356
Healthcare Sector

*Dr.Shoeb Ahmed Ilyas

24. Effect of Longer Working Hour On Indian 357-368
Workforce - During COVID-19 Crisis

*Dr.M. Maya

**Dr.S. Nithya

25. A Closer Look At Reshaping The Work in 369-381
The POST-COVID-19 Scenario

*Mahesh T R.

**Vivek V.

***Sindhu Madhuri G

26. Emerging Business Trends Amidst COVID 382-400
Surge

*Mansi Gandhi

**Khairunnisa Amreen

27. Relevance of Social Entrepreneurship in 401-411
The Pandemic COVID-19 Scenario

*Ms.Anu Mercy Zachariah

**Ms.Rosmy Joseph

***Mr.Vivek V Vijayan



Commerce and Management Association

Lucknow

Certificate of Publication

This is to certify that chapter entitled “Proposed Solution for Challenges faced by Academicians while Teaching Online during Pandemic” co-authored by “Dr.Arpana Chaturvedi, Associate Professor, JIMS Delhi, India” had been reviewed by the board and published in book “Emerging Business Practices and Trends During COVID-19” ISBN No. “978-93-90548-96-5” on 30/04/2021.

Heartly congratulations and appreciations from Commerce and Management Association.

Amit Verma

Dr. Amit Verma
Chief-Editor/Secretary

Proposed Solution for Challenges faced by Academicians While Teaching Online During Pandemic

Dr. Deepti Khanna
Associate Professor
JIMS
Delhi, India
deepti.khanna@jimsindia.org

Dr. Arpana Chaturvedi
Associate Professor
JIMS
Delhi, India
ac240871@gmail.com

Abstract— The Pandemic has revolutionized the entire era of the world and especially it has impacted to the students, teachers and all Academicians various sectors. The critical situation and crisis have totally disrupted the education system affected them badly. It was a time when almost all the Educational Institutes adversity has forced them to close it everywhere almost overnight. This critical period has forced the education system to change its pattern of teaching and brought the drastic revolution. It has changed the mindset of all students and teachers and taught everyone the importance of Information Technology. To overcome the crisis in education sector, all Academicians have successfully able to find the alternative ways and best solution to keep the students of all ages intact with studies. After lot of brainstorming and research, all the teachers, professors, various Academicians were suggested to adapt the online mode teaching methodology. It has made compulsory for all to learn and adapt this mandatory shift. It was really highly appreciating that with lot of complications and non-awareness, they learned, adapted, practiced a lot and with all efforts made it successful. At the same time, so much of inspirational accord was observed to keep all colleges, schools, playschools, kinder gardens running. In this paper we will analyze various Challenges faced by Academicians and students of all ages. Among many, few of the challenges faced by people are the issue of internet connectivity, lack of awareness with the technology, lack of minimal and basic awareness on working of the system, non-availability of useful resources, being unaware of the virtual or online concepts of audio, video interactions using available tools. We have done survey in online mode and collected data using Google form to perform successfully our research. The data we collected from the students of all generations, teachers, professors, academicians and parents. We have shared the Google form with approximate 500 of people from Delhi-NCR and from some remote locations of Uttar Pradesh, Haryana and successfully collected primary data of size 270. This primary data is analyzed and performed with t-test to reach to the proposed solutions.

Keywords— COVID-19, Education, Teaching, Learning, E-Learning Tools and Connectivity, Bandwidth, NIELIT, Development, Google Form.

1.1 Introduction

Technology is so powerful and it keep on surprising us with its developments and innovative devices which keep on playing a crucial role in our life. Technology has made us dependent on itself from years and specially played a very crucial role during COVID-19. Technology act as a survival of life of almost all human beings and industries. We are United and standing together globally and fought bravely with this pandemic situation just because of the technology. At the same time the we cannot ignore the fact that awareness

to use the technology, the fulfillment of requirement to use the technology, the gadgets required by each and every one was not at all suffice. Education sector has always played a very important role in society and from years India is fighting to educate all human beings. India is trying to provide Internet Connections, electricity and awareness to use it in all remote areas. In spite of this we cannot predict the situations and should always be ready to fight against any worst situations.

Initiatives and Best Practices Adopted by Academic Institutions in Online Learning Mode:

The best practices Academic Institutions adopted to ensure seamless online learning are:

1. Efficient Learning Practices:

- Faculties have prepared the Presentation of each and every topic and unit before the conduct of semesters
- All the Faculties of all various courses has recorded their lectures.
- The recorded lectures are uploaded on YouTube and links are shared with the students, so that students can listen the lecture again and again and can ask queries if they have any. This approach has improved the sensory approach of all the students and engaged them well. With approach of Engaging Sensory Experience with all the students, they are able to hear and see the various concepts that are being taught and will process them in a similar way during everyday interactions. It helped them to repeat and understand the complex topics that demand a great level of understanding.
- School teachers who were not aware of the technology, updated themselves and learnt the new way of delivering lectures.

2. Properly Planned Schedule Implementation:

Students were shared with Time Table and as per the schedule Online classes were taken on zoom, lectures recorded at that time and are shared with the students.

3. Best practice and exposure to practical concepts:

- As many courses has many practical subjects, they were shown all practical's online and students were given screen sharing permission so that students can share their screen, show the programs made by them and ask queries. At the same time, faculties solved their doubts, debugged the errors and explained them, why the error was coming in the program.

b) In this way, with this effective approach, all the students get clarity that how the programs in the programming languages taught can be made and debugged, how the logic can be implemented in the given program to give the solution of the program.

4. Better use of E resources and Assessment plan:

a. Faculties used Google classroom to share the assignments, checked and graded there after checking.

b. Faculties shared YouTube videos and online MOOC portal links, from where students can explore the concepts. Lectures were empowered with available free and effective videos.

The core objective of using various effective methodologies during this pandemic to provide effective and satisfactory teaching has covered each and every aspects of online education. It has included the 100% coverage of the curriculum, clarity in theoretical concepts, proper engagement of students with practice questions shared through Google Classroom and assessments scheme, Industry Interactions by providing various Guest lectures and Workshops on the demanding and technical topics, engaging students by engaging them with result-oriented MOOC portals like nptel lectures, Udemy, Udacity, khan academy, edx etc., and asking them to make project in the language they are learning with proper mentoring support.

1.2. Objective of Research Work

The main objective of the research made in this paper is to study the challenges faced by Academicians and students during this pandemic. Due to covid-19 academician and students were not able to get proper education. Imparting Education to enhance knowledge and skills in students to make their future bright is the main job of Academicians and need of the country. Due to Pandemic, universities and schools are forced to close the Institution and till date they are not able to open it. In this paper we have researched and discussed the issues and challenges faced by them in taking online education during COVID-19 pandemic. We have also discussed and proposed the solution to the problems faced by them. To perform the research, we have studied the problems and issues faced by students of different age groups. We have also considered the problems faced by Academic Institutions like Play Schools, Primary Schools, High and Higher secondary schools, Colleges and Universities. We have created a questionnaire based on the study using google form and collected data of 270 students and academicians of Delhi NCR and remote locations of UP. The data is collected in Online mode for which we have shared the using email ids of different age candidates. This collected primary data is analyzed using SPSS and implemented t test on it to reach to the conclusion. Among many reasons we included primarily technical problems and availability of resources related non-technical problems. The t-test helped to conclude the solution to these problems.

2. Challenges faced by Academicians during Pandemic:

In today's scenario of Lockdown, Global pandemic has impacted badly the education System and it is in its critical situation.

a) Lack of Interaction due to Monologue Sessions:

In Online Classes the sessions are mostly monologue based in which Teacher tries to explain all facts and put all his/her efforts. On the other end students are only able to see the screen and can hear voice from one end. They were not able to feel like being in class and felt lack of interaction between teachers and classmates. Mostly students get a comfortable environment to take online classes which made them lazy and unable to understand the facts. They hesitate to ask and mostly get easily diverted in home environment. Being on mute, and facilitated with hiding themselves with Camera off option, mostly they started taken class anywhere at home and rarely taken class as a student with a proper posture. This result in lagging behind and they opted better to be quiet instead of being interactive in a class.

b) Various Entrance Exams Withheld:

During the month of April to June, students have to appear for many entrance examinations. Students who appeared for board examination have to look for admission opportunities in the best colleges and top universities on the basis of the entrance result only. Not only common entrance examinations, many of the major entrance examinations like Engineering, Medical, Law and govt exams like SSC, UPSC, Bank Exams, Railway's exams etc. exams are also postponed. Delay in all crucial activities impacted badly the futuristics decisions of many students. Students who have entered in 10th and 12th, they are not able to study as earlier the students used to study and learn the concepts.

c) Lack of availability of required resources:

People living in rural areas or shifted due to pandemic in rural areas faced resources related issues like non-availability of laptops, desktops as well as Internet connectivity. Still in India the speed of Internet connectivity is very poor. and The Internet Connectivity: India is having the second largest online market after China in the world over 560 million internet users. As per the survey and estimation done by researchers, there would 650 million and more users by 2023 and only half of the 1.37 billion Indians had only access to Internet. The internet users as keep on increasing and 264 million users lives in rural area; they faced the Internet connectivity issues. 67% of India population is living in rural area has faced connectivity issues along with non-availability of resources. This pandemic has affected students living in these remote areas badly and affected their educational growth. As per the 2011 census report the total number of towns have increased from 5161 to

7931 in 2011 and this year again census will be going to be recorded. As per 2011, approx. 67% of population is living in rural areas and pandemic situation made the situation of these location worse. There were even no human resources to solve technical issues they were facing at their houses as well as non-availability of gadgets like laptops, charger brought them in a situation was dealing with these situations was the biggest challenge. Overcoming it was next to possible and the impact will go long as effected the growth of student's education. Once the country able to overcome this situation and come back to normal life then also it will be not easy to fill this gap.

- d) **Resource issues faced by Academicians of Urban Areas:** The immediate shift of education has forced the teachers, professors to start teaching online. It has been observed that even these Academicians faced the challenge of not having proper resources. Mostly people were having Desktop which was not camera enabled. They were not aware of the techniques they have to use to teach students in online mode. Practical papers required the usage on Board and pen. Teaching students for long number of hours need the lecture to be converted into presentation form and explanation need the board to be used. The long number of teaching requires broad band connection with high speed. Mostly in a family all the members need the hardware and software resources to be used at the same time. Parents cannot afford individual devices for working mother, father and for their children. The situation was pathetic and impacted badly to cope up with the situation in terms of acquiring Knowledge or delivering lectures. As per study the Lack of Gadgets, necessary equipment's, software's and hardware's issues were faced more than 45% of people even living in urban areas.
- e) **Lack of Appropriate and necessary technical skills, awareness and knowledge to use:** The need of the hour was awareness of the technical skills required in government and private employees, in various academician of schools, colleges and in students of all ages. The critical time was not worried about the peoples no matter they are from different backgrounds and with different education levels. Immediate shift has taken them in a position where they were in hand of technology and only surviving option was the knowledge of sufficient technical skills. Mostly people lack in this area and were not aware of how to use the technology and start working in the same way to serve the organization and to save their job to survive. Any of them have lost their jobs. Organizations need to teach and provide them awareness basic knowledge they need to utilize the technology. People tried to

learn and acquire the knowledge about technical concepts and start working online, whereas it was very challenging job. Learned people shared their knowledge with their colleagues and made all hard efforts to sink all of them with the need of the hour. It was the high time when the proper setup was required to make all whether from technical background or not and to all people of all sectors whether it is government or private to make them aware of the technology and its utility. As "Theodore Roosevelt said IT is Hard to fail but is worse never to have tried to Succeed" and that is why it was very much required to teach them and bring everyone at the same level so that we can come out from the crisis successfully.

- **Knowledge of Troubleshooting Skills:** It was very much required to be aware of solving minor technical issues by our own whenever we need an immediate solution so that work doesn't get hinder and effected. Usually, to find solution in such situations when community need service people, necessary gadgets to keep themselves intact and connected with the people and technology. But in this pandemic people, we were not able to get this support system and ultimately and thus awareness of troubleshooting problems was must. Many times, we need some resources to make the system work, which we are not able to get, market was closed and also due to non-availability of resources in the online market.
- **Privacy and Security Concerns:** There were so much of news regarding misuse and theft of data by the companies like zoom, providing the tool to interact with the community. It has made all of us so much dependent that even after comparing between all the available tools, people compromised with their choices and used these tools only. The available tools were not having all the services available under one idea tool and choice is dependent on their requirement and utilities only. Looking at the need and availability of features in tools, the only alternative solution was compromise.
- **Level of Concentration, Discipline and Motivation:** The immediate shift from offline mode to online mode has not been adapted and accepted by students and teachers successfully. Students attends the classes forcefully and casually. The level of concentration while taking online class has been dropped. Monologue session made the session very boring and students start losing their interest. Usually, students' casual attitude while attending the class made them highly in disciplined. Students attends the classes while sleeping, or being somewhere out with friends through Mobile. This attitude made teachers job very challenging. It becomes difficult for them to keep them motivated

and make all the concepts clear. It is very difficult to adapt new changes came into academician's life due to pandemic, as it is not easy to forget old habits. It takes time and technological advancement and shift made the parents also responsible. Teacher are at remote locations and parents are at home, the parents are required to cooperated to keep their child disciplined and motivated. To keep the session interesting and to maintain better communication between teacher and students, parents need to play crucial role and to track their activities minutely.

- **Impact on Mental health and Psychology of Academicians:** People needed to learn how to manage time. It has also been observed that dependency on employees brought a revolutionary change. Earlier people used to work for an 8 hours and rest of the time they were able to give to their personal life and family. Now the mentality and dependency on the people changes and they are working 24 by 7. Anytime they get a job and they have to complete it then and there. We need to change the psychology adapt the changes and dependency without disturbing and interfering in professional and personal space.

3. **Solutions and Study Related with online Education Problems: -**

Tools used: -

Google form, Microsoft-Word., Microsoft-excel.

f) **The Internet Connectivity**

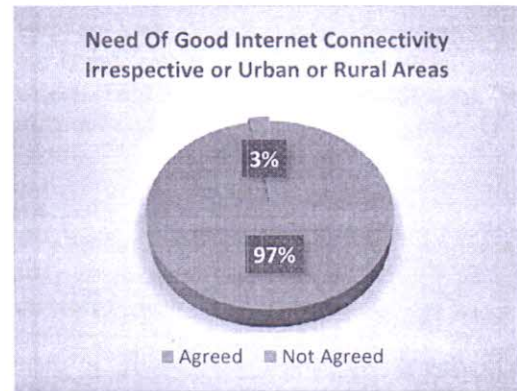
Solution: -

The government of India has launched the scheme on 29 of June 2020 that they will be upgrading the universities by 2025 according to the digital need of the time. To resolve the issue of internet connectivity, speed and availability of required bandwidth, Google agreed to invest a sum of 10 billion in India by the year 2026. A very big and major milestone which India achieved is by providing 500 million internet connection across the country. As in India there are still remote areas and rural areas where India needs to work much harder to provide them better internet connectivity. It will not at all be enough to upgrade universities alone, at the same time it is required to upgrade the cities & towns as well. Government and private sector need to setup many digital centers at different locations of different areas at some defined distance through which the reach of the internet can be more easily reachable to the towns, cities & the remote areas.

Study: -

Based upon our survey done among various Academicians and students of colleges, universities and schools residing in Delhi-NCR and in Rural areas of UP, we found that out of total 270 people approx. in survey 97% people agreed that such

situations need high speed and good bandwidth fast reliable internet connection.



Essential need of Heart and brains of system with Compatible resources like Hardware & Software:

The major issue faced by the academicians was the immediate shift of education system from offline and physical mode to online mode. The critical and crucial time has not even given time to understand the situation and forced to change the teaching pattern. To start teaching students in online mode, teachers were not given sufficient time to think, plan and trigger the action in positive and impactful way. They were not having proper required necessary resources, tools and equipment's. It has been analyses after various surveys and reports that only 3.13/100 homes were having personal computers and 1.34/100 households were having broadband connection. During pandemic many people went back to their home town which were in remote locations and there apart from resources, internet connectivity was a major issue.

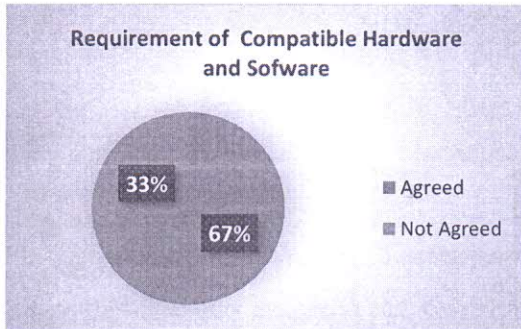
Solution: -

The number of users increased amazingly and their dependency on internet demanded the government make the technology cheaper. Technical people of entire I.T sector need to stop outsourcing the hardware & increase the production and make it more reliable. The need of an hour is to increase the quality & the production along which will help in making the technology cheaper. Cheaper technology enables the academician and students of all levels to consume cheaper and with best extent the technology which ultimately increase the effective and economic consumption of every household. The government needs to start making structural changes in the working environment of the workspace through which there will be a boost in purchasing. There should be provision to facilitates and acknowledge the manufactures about the better bank loans policies

& interest rates on the production cost. This emphasizes the manufacturer of different companies to expand more in terms of producing more quantity of better products at low cost.

Study: -

We found out in the total responses 59% agreed to having hardware and software is necessary and 41% disagreed.



Awareness of Technical Knowledge to Use Technology and knowledge to troubleshoot some common issues:

Solution: -

To solve the issue of unawareness amongst people to work efficiently with the technology, it is very much required to set up an awareness campaign. Various Institutes are required to be setup to facilitate people with technical knowledge. The campaigns should be launched by the Government and private institutes in which professional and knowledgeable people should guide them and make them aware of the way the technology is to be used. When more and more people enroll in the process of learning, the awareness spread amongst them and they will come to know about the merits of the technology. People start utilizing the technology as they will gain knowledge and experience. They will become aware of that how the technology should be used and it can help them to give there 100 %. They all will share with the others around which will then help in for the others to know the technology in a much better and subtle way. People will not be in fear in using the new aide and become independent. It will involve a greater number of people to cooperate and coordinate with each other's and to increase productivity.

As "Theodore Roosevelt said IT is Hard to fail but is worse never to have tried to Succeed" so unless and until we evolve with the new change we will not succeed in the today's world.

g) Problem Solving Skills (In Terms of Technology Used)

As we will acquire the knowledge to make use of the technology in our daily life we will come across some difficulties in using them. The acquired

knowledge will make it possible that we will be able to find the solutions to any such problems which can occur any time. As the first solution step, there is no any need to call the service people. It is very much necessary and the need of an hour to learn to resolve the problems by ourselves.

Solution: -

This pandemic has given lesson to all government and private sector and challenges faced by all concluded with the necessity of awareness campaigns and high internet connectivity in all over the areas of India whether it is urban or rural. The government of India has already setup institute where one can enroll and acquire basic knowledge to use and to resolve the problems. Government should encourage more & more people in the private sector to build and run such institutes for better connectivity and for reducing the fee for the course. The study says that the government need to establish more institute as of now. India only has 42 NIELIT centers in various states, which are not sufficient in numbers. There is a need for more centers and at the same time the government should invest more in the infrastructure for building these centers. Many parents lost their jobs and might be they cannot afford the fees. It is very necessary to charge economic fees from the students of schools and colleges.

Study: -

In this research paper the survey is done on 270 people. The primary data is collected from various academicians, students of schools, colleges and universities. The Google Form based Questionnaire was shared in online mode after collecting the email ids of Students and academicians. Questionnaire was also shared with various WhatsApp group. The area from where Primary data was collected was schools, colleges and universities of Delhi -NCR and rural areas of UP. We conducted a Survey upon a group of 270 people approx. to understand and solve the problems. It helped us to understand more clearly various issues and to reach to some productive conclusion: -

In the survey we used t-test to understand impact of technological change made by universities and schools.

The t-test used is based on two sample which are independent to each other. The nature of data is continuous and follows the normal probability distribution. Both samples we have taken are simple random samples from their respective populations. Each individual in the population has an equal

probability of being selected in the sample. The t-test is any statistical hypothesis test in which the test statistic follows a t-distribution under the null hypothesis.

In our research we used two sample t-test to find the significance difference based upon the feedback by the people.

Formula: -

$$\text{Two - sampled test } t = \frac{\bar{x}_1 + \bar{x}_2}{s_{x_1 x_2} \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$df = n_1 + n_2 - 2$$

Here

T is the t-statistic.

X1 = Sample 1- Mean Value .

X2 = Sample 2- Mean Value

N1 - Total Number of people from Sample 1.

N2 - Total Number of people from Sample 2..

SX1X2 - standard deviation calculated from The Sample 1 and Sample 2.

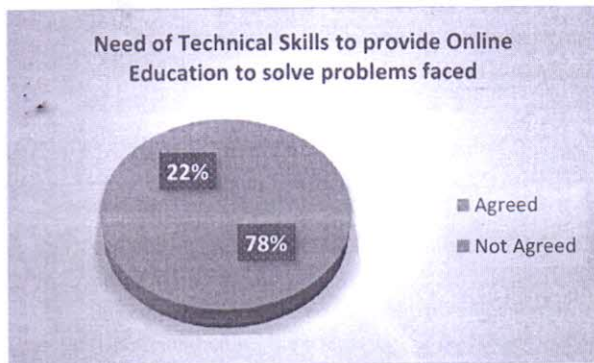
Df - degree of freedom. It is the number of different ways a mean could vary.

In our research we have taken the p valuee 0.05

Upon conducting the test: -

Here the p value is <0.5

i.e. 0.001203 which shows that 78% of the people face internet connectivity problem and lack the knowledge to use them and also they lack in knowledge to resolve the technical issues they faces.



h) Piracy and Privacy

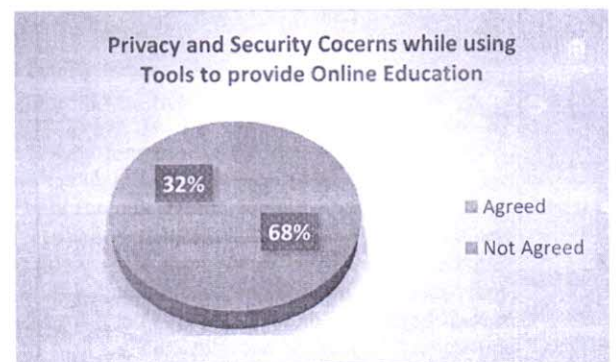
As the dependency of Internet is increased and digitization has been globalized, the insecurities are also increased. The data and personal information of millions of people are freely available and can be misused. It is very much required to look after the piracy and privacy issues to keep internet users dependent and safe.

i) Solution: -

To overcome the issues of piracy and privacy of information and to protect millions of user's data, much stricter and strong IT laws are to be introduced. The government and the private sector should revise the existing laws. They need to work together to solve the piracy and privacy issues. We need to scrutinize our internet activity in order to be safe, In 2017 alone there were 21,796 cybercrimes reported and this was just the no that was reported the actual number will be much higher, since then there has been an increase in the cybercrime at an alarming rate of 68% approx. We need to setup R&D (Research and Develop) departments to look after the possible threats in the upcoming years and how we can escape these threats. There should be a practical exposure which has to be given to the students on security solutions. They should be motivated to

	Variable 1	Variable 2
Value of Mean	9.691478	9.040539
Calculated Variance	1.620094	3.870031
Observations	158	158
Total Variance Pooled	2.691399	
Hypothesized Mean Difference	0	
Value of Df	317	
The calculated t Stat	3.322407	
Calculated P(T<=t) i.e., one-tail	0.000642	
Calculated t Critical i.e., one-tail	1.667900	
Calculated P(T<=t) i.e., two-tail	0.001203	
Value of t Critical i.e., two-tail	1.985632	

develop algorithms to secure data which can provide solutions to various threats. They should be motivated to propose such solution to R & D team, where it can be tested and implemented



Study: -

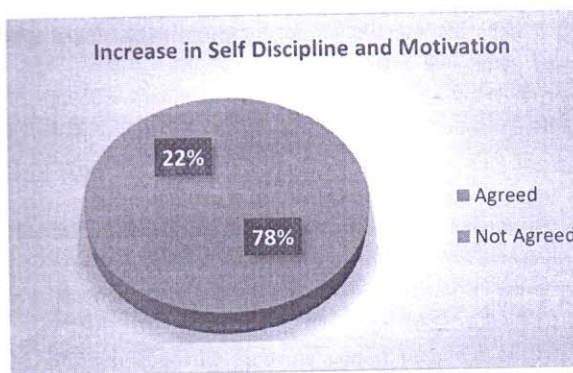
Based upon the survey done upon 270 academicians approx. it shows that 68% of people have lot of fear of loss of data and private information. As per various studies, they agreed that there are chances of loss of information and data through online portals like Zoom. The research done in the paper also shows that people are having privacy and piracy concern whereas 32% of people do not have privacy and privacy concern.

j) Discipline & Motivation

Solution: -

COVID-19 pandemic has completely changed the view of a person to look at the life and problems. The dependency on technology for their survival has given a different perspective to all students of schools and universities along with the society. This prolonged process of technological change has now taken a fall and we all need to adapt this change but at the same time it is difficult to leave and forget old habits. We need to accept the change and enhance our technical skills to survive in this critical time. We cannot predict the future and we don't know how long it will go. Many schools and companies started liking the way of working and see the benefits also. The need of an hour is to enhance and learn -un learn the in-demand technologies and start practicing the art of being aware with the technology. Teachers and parents together need to establish a better communication among them to look after the discipline of the students taking the help of the technology to keep a track of the activity. To maintain the never-ending interest in the students one needs to find more and more alluring and interactive and ubiquitous ways to teach and learn.

Study: -



Based upon the survey we found out that there was discipline related major issues faced by more than 78% approx. of the people. This problem creates lot of hindrance because of which, in this academic year, they

were not able to put best efforts they can make to give better output. in the academic year.

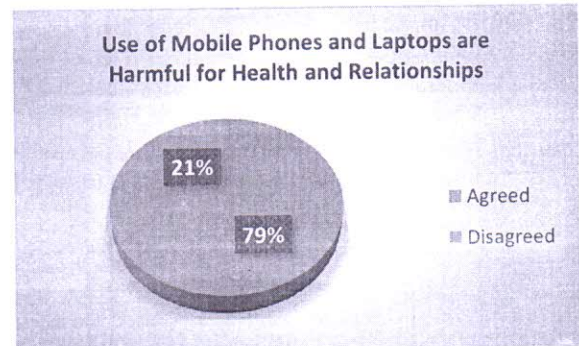
k) Psychological

Solution: -

It is very important to be positive and well efficient to move ahead and grow with the change. In all critical Situations, we should be mentally and psychologically very strong and positive. Then only we all will be overcome any problem and come out successfully with any critical situation. We should keep ourself updated and should always be ready to face any challenge. This pandemic has given us a lesson and we all have worked hard with unity to fight against this situation and are successfully came out till some extend. We should be able to come out with best possible way to resolve the problems we face. The change in the attitude of people is noticed as few of them love to work in isolation and few of them seek help of others. It entirely depends on individual's decision and they decide as whichever best works for them.

Study: -

The survey results that approximate 79% of the students and academicians have been badly affected in terms of their mental and physical health and eyesight related issues. People sitting in front of laptops for long number of hours is the main cause of psychological problems and whereas hardly 21% of people are not affected by the use of technology.



Students' response to the new initiatives taken by Academic Institutions during Pandemic:

Students are having mixed response. Many of the students are not happy with the change and finding it difficult to adapt. Schools and colleges are trying their best and have taken best appropriate initiatives to impart them with quality education. At the same time if we look from student point of view, they are not finding it good. They are not able to attend classes properly and with full concentration because of the network connectivity issues. The various factors which made difficult to cope up with the pandemic situation is:

Not able to understand the concepts. They are having doubts but in online education the face-to-face interaction is lacking.

Due to internet connectivity issues, not able to attend lecture properly. In between many times it happens that internet connectivity issues arises and they get disconnected.

Many of the outstation students went back to their home town which is in remote locations. Their non-availability on internet, electricity is a crucial issue which has made the students situation critical. They are not at all able to attend classes and not able to appear for exams.

Many of the candidates are not available with resources like desktop or laptops. They are not in position to purchase the system. Many students' laptops are not in working state, they are not able to get it back in working storage due to unavailability of engineers. These solutions can't be get done in online mode.

Many students' parents have lost their job and have loss in business they were not at all in position to purchase internet connection of good bandwidth.

At the same time, students also taken it positive and learned to do work with more efficiency and effectiveness. They learnt that they can work in online mode also and save their time. After classes, they learnt many new technologies by joining MOOC portals, get certifications, made projects, worked as an intern and done freelancing. Many students felt it as opening of new era where technology can help to run any business. They got an idea of new openings in coming time and learnt skills accordingly. They realized that having one laptop with good internet connection and person with required skill can help them to make their career bright and successful and can earn enough money to live their life with all required amenities. No need to have a good account balance to become an entrepreneur or to run a business. Many of them earned well also during pandemic and opened a new way for their life and will go long to achieve more success. impact will it have on students' interpersonal, team management skills?

Conclusion: This pandemic situation has impacted on people as a curse as well as the opportunity. It is the time to live with the change and adapt it instantly, to be proactive and skilled. We need to live with the pace of change and should keep on learning and updating ourselves. Technology and situations can bring any time any change. Both are unpredictable in both ways, positive and negative. Be alert, updated and ready to deal with coming situations. During Pandemic students were engaged with good practices like Online Internship programs, live projects, Free Training Programs, workshops, so that we can keep them engaged in related activities as well as can keep them updated. The situation impacted as a boon for the opportunists and bane for the people who were in remote areas, or were not skilled or not having appropriate situation to deal with this critical situation. It is concluded by trying to find out the solutions of the problem that we need to work together as a support for each other and government and private sectors should facilitate basic requirements to all remote locations. People need to be got aware of the importance and Utility of technology through some campaigns. Government should come out with some scheme to provide essential resources and applications to the people who cannot afford. We need to prepare ourselves to fight against such critical situations if faced by us in future and

should be able to handle it more efficiently and effectively in much better and productive way.

Acknowledgement: We would like to thank various panelists who have spoken in many webinars about the impact of pandemic on academicians. We read many research papers and attended conferences and would like to thank all the researchers and panelist to learn from them and understand the critical situation faced by academicians. We would like to thank all of them as their research work has provided the insight and expertise to us and their work has helped us to complete my research. I would like to thank to reviewers for their comments on an earlier version of the paper, who guided me and made me realized about my mistakes. Lat but not the least, we would like to thank our family members, who cooperated with us and made it possible to share my views about the situations and problems faced by academicians during pandemic.

Reference

- [1] Anderson, Terry. "TEACHING IN AN ONLINE LEARNING CONTEXT." <https://Citeseerx.ist.psu.edu/Viewdoc/Download?Doi=10.1.1.511.1503&Rep=rep1&Type=Pdf>, citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.511.1503&rep=rep1&type=pdf.
- [2] Anderson, Terry. "The Theory and Practice of Online Learning(Pp. 271-294)." <https://Ufdc.ufl.edu/AA00011700/00001>, Athabasca UniversityPress., ufdc.ufl.edu/AA00011700/00001.
- [3] Anderson, Terry. "The Theory and Practice of Online Learning (pp. 33-60)." <https://Ufdc.ufl.edu/AA00011700/00001>, Athabasca UniversityPress., ufdc.ufl.edu/AA00011700/00001.
- [4] Benson, R., & Brack, C. (n.d.). Online learning and assessment in higher education: A planning guide. Retrieved from <https://research.monash.edu/en/publications/online-learning-and-assessment-in-higher-education-a-planning-gui>
- [5] Broadbent, J., & Poon, W. (2015, April). Self-regulated learning strategies & academic achievement in online higher education learning environments: A systematic review. Retrieved from [regulated_learning_strategies_academic_achievement_in_online_higher_education_learning_environments_A_systematic_review](https://www.researchgate.net/publication/275111111_Self-regulated_learning_strategies_academic_achievement_in_online_higher_education_learning_environments_A_systematic_review)
- [6] Davidson, R. (2015). Wiki use that increases communication and collaboration motivation: A reflection several semesters later. <https://files.eric.ed.gov/fulltext/EJ1083925.pdf>. <https://files.eric.ed.gov/>
- [7] Graham, C. R., Misanchuk, M. (2003). Computer-Mediated Learning Groups: Benefits and Challenges to Using Groupwork in Online Learning Environments, In: T.S. Roberts, ed. *Online Collaborative Learning: Theory and Practice*, Hershey, PA: Information Science Publishing.
- [8] Graham, C. R., & Misanchuk, M. (2004). Computer-mediated learning groups: Benefits and Distance Education, 34(3), 256-270. doi: 10.1080/01587919.2013.835771
- [9] J.D.S.G. (2007). Learning in groups: A handbook for face-to-face and online environments. <https://www.routledge.com/Learning-in-Groups-A-Handbook-for-Face-to-Face-and-Online-Environments/Jaques-Salmon/p/Book/9780415365260>. <https://www.routledge.com/Learning-in-Groups-A-Handbook-for-Face-to-Face-and-Online-Environments/Jaques-Salmon/p/Book/9780415365260> Kirkwood, A., & Price, L. (2014). Technology-enhanced learning and teaching in higher education: What is 'enhanced' and how do we know? A critical literature review. *Learning, Media and Technology*, 39(1), 6-36. doi:10.1080/17439884.2013.770404
- [10] Little-Wiles, J. M. (2011). FACULTY PERCEPTIONS AND USE OF A LEARNING MANAGEMENT SYSTEM AT AN URBAN RESEARCH INSTITUTION. <https://www.asee.org>, *Conflict Resolution & Negotiation Journal*, 4(1), 1-13.
- [11] Transitioning to Blended Learning: Understanding Student and Faculty Perceptions. (2011, February). *Journal of Asynchronous Learning Networks*, V15 N1 P20-32 Feb 2011. <https://eric.ed.gov/?id=EJ918216>

- [12] Prensky, M. (2001). Digital Natives, Digital Immigrants. [https://www.marcprensky.com/writing](https://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.Pdf)
- [13] Little-Wiles, J. M. (2011). FACULTY PERCEPTIONS AND USE OF A LEARNING MANAGEMENT SYSTEM AT AN URBAN, RESEARCH INSTITUTION. <https://www.asee.org>
- [14] <https://elearningindustry.com>
- [15] Deepti Khanna, Ayush Prasad. "Problems Faced by Students and Teachers During Online Education Due to COVID-19 and How to Resolve Them" , 2020 6th International Conference on Education and Technology (ICET), 2020

Lecture Notes on Data Engineering and Communications Technologies

Volume 59

Series Editor

Fatos Xhafa, Technical University of Catalonia, Barcelona, Spain

Jennifer S. Raj · Abdullah M. Iliyasu ·
Robert Bestak · Zubair A. Baig
Editors

Innovative Data Communication Technologies and Application

Proceedings of ICIDCA 2020

 Springer

Editors

Jennifer S. Raj
Department of Electronics and
Communication Engineering
Gnanamani College of Technology
Namakkal, Tamil Nadu, India

Abdullah M. Ilyasu
College of Engineering
Prince Sattam Bin Abdulaziz University
Al-Kharj, Saudi Arabia

Robert Bestak
Telecommunications
Czech Technical University in Prague
Prague, Czech Republic

Zubair A. Baig
School of Information Technology
Deakin University
Geelong, Australia

ISSN 2367-4512

ISSN 2367-4520 (electronic)

Lecture Notes on Data Engineering and Communications Technologies

ISBN 978-981-15-9650-6

ISBN 978-981-15-9651-3 (eBook)

<https://doi.org/10.1007/978-981-15-9651-3>

© The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2021

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Singapore Pte Ltd. The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

Automatic Dermatoglyphics Multiple Intelligence Test Based on Fingerprint Analysis Using Convolution Neural Network	755
Komal Darji, Sagar Darji, Sumit Nisar, and Abhijit Joshi	
Real-Time Monitoring of Crop in Agriculture Using Wireless Sensor Networks	773
Kirankumar Y. Bendigeri, Jayashree D. Mallapur, and Santosh B. Kumbalavati	
Cognitive Learning Environment and Classroom Analytics (CLECA): A Method Based on Dynamic Data Mining Techniques	787
Miftah Al Karim, Asif Karim, Sami Azam, Eshtiak Ahmed, Friso De Boer, Ashraful Islam, and Fernaz Narin Nur	
Cloud Computing Adoption: Influencing Factors on Online Firms	799
Manjula Shanbhog	
Change Detection in Remote-Sensed Data by Particle Swarm Optimized Edge Detection Image Segmentation Technique	809
Snehlata, Neetu Mittal, and Alexander Gelbukh	
Artificial Intelligence-Based Scribe	819
V. G. Ganesh Bharathwaj, P. S. Gokul, M. V. Yaswanth, S. Sivasurya, and A. Meena Kabilan	
A Hybrid Approach to Review Mining—Restaurant Data in Depth Analysis	831
P. Raghavendra Babu, S. Sreenivas, U. S. VinayVarma, and N. Neelima	
Fresko Pisces: Fish Freshness Identification Using Deep Learning	843
Anandhu Suresh, Arathi Vinayachandran, Chinju Philip, Jithu George Velloor, and Anju Pratap	
Face-Based Alumni Tracking on Social Media Using Deep Learning	857
Deepti Prasad, Rasika Gaiwal, Shivani Bharambe, Supriya More, and Ashwini Jarali	
Lane Detection Using Sliding Window for Intelligent Ground Vehicle Challenge	871
Sahil Samantaray, Rushikesh Deotale, and Chiranji Lal Chowdhary	
An Enhanced Packet Delivery Ratio for Mobile Ad Hoc Networks Using DCCHSM Algorithm	883
J. Vijayalakshmi and K. Prabu	
Author Index	893

Change Detection in Remote Sensed Data by Particle Swarm Optimized Edge Detection Image Segmentation Technique

*Snehlata ¹, Neetu Mittal ², Alexander Gelbukh ³

¹ Amity University Uttar Pradesh
^{1*} snehsheoran312@gmail.com

² Amity University Uttar Pradesh
² nmittal1@amity.edu

³ Instituto Politécnico Nacional Mexico
³ gelbukh@cic.ipn.mx

Abstract: An imperative task from the prospects of land development monitoring, disaster management, resource management and environment evaluation is change detection. Satellite images helps in monitoring change detection as they are the big repository of information. For change detection, segmentation of an image is being performed for locating the areas of interest. Nature inspired particle swarm optimization is a metaheuristic algorithm which is simple, robust and makes less number of assumptions for the problem considered. This paper presents a particle swarm optimization (PSO) algorithm as edge detection segmentation technique for satellite images, which are being acquired from Google Earth. The results are compared with the conventional edge detector operators such as sobel, canny and prewitt with the help of entropy values. It has been observed that PSO outperforms the conventional edge detection image segmentation methods, thereby giving better edges and clarity in images for change detection.

Keyword: Particle swarm optimization, artificial intelligence, satellite images, segmentation

1. Introduction

In image processing, the most basic operation is image segmentation for better understanding of images and considered to be the first phase in image processing. Image processing helps in visual appearance of an image along with preparing the images for analysis. Segmentation is about identifying the areas of interest as it subdivides an image into similar regions. Various practices finds their application in the field of image segmentation. The major application of image processing covers medical images and satellite images. Satellite images are also big storehouse of information. Processed satellite images has application ranging from land use land cover monitoring, natural resource management, forest fires, natural disasters, change detection and many more. Two major approaches for change detection in satellite images are object based and low level local approaches [1]. Remote sensed data has been characterized by four different types of resolutions such as spectral, spatial, temporal and radiometric. Extraction of information from such dataset is a taxing task and has invited the interest of many researchers. Nature inspired algorithms such as particle swarm optimization, artificial bee colony algorithm, ant colony optimization also finds application in processing remote sensed data. These swarm optimization algorithms represents a subset of artificial intelligence and are gaining importance as these techniques are offering great flexibility and changeability [2]. Particle swarm optimization is considered to be a metaheuristics algorithm which makes no or less assumptions about the problem which needs to be optimized. It can also perform search operations where the candidate solutions are large in number. It is also robust and can show high efficiency in locating the global optimal solution. PSO is also considered to be a derivative free technique and is also less sensitive to the kind of objective function [3].

The paper has the following structure. Section 2 discuss the related work, section 3 offers the proposed methodology based on particle swarm intelligence and the results are being discussed in section 4 followed by conclusion in section 5.

2. Related Work

Bhandari, A. K. et. al. [4] considered colour satellite image segmentation by putting in use the cuckoo search algorithm. It has been supported by Tsallis entropy for multilevel thresholding and was evaluated against wind driven optimization, artificial bee colony (ABC), differential evolution (DE) and PSO, where the proposed method turned out to be more robust and effective. Bhandari, A. K., Kumar, A., & Singh, G. K. [5] suggested the application of modified ABC based segmentation for unearthing the optimum multilevel thresholds and the technique was evaluated against genetic algorithm (GA), PSO and ABC algorithm by considering Kapur's, Otsu and Tsallis objective functions.

Senthilnath, J., et. al. [6] proposed the clustering approach using novel bat algorithm for finding solutions in crop type classification with the help of multispectral satellite image and compared the results with other two meta-heuristic approaches such as particle swarm optimization and genetic algorithm. Muangkote, N. et. al. [7] enhanced the optimal multilevel thresholding effectively by implementing improved moth-flame optimization algorithm on satellite images and comparison was done with five existing methods. Ryalat, M. H. et a. [8] investigated PSO, fractional order Darwinian particle swarm optimization and Darwinian particle swarm optimization for segmentation of medical images and it was observed that FOD-PSO is better with respect to speed, stability and accuracy. Zhao, X. et. al. [9] used 2D Kullback-Leibler divergence and modified PSO for presenting a segmentation algorithm, which in turn proved to be effective & robust.

Suresh, S., & Lal, S. [10] presented an improved differential-PSO by using chaotic sequences which have replaced the random sequences and comparison was done with PSO, harmony search, Cuckoo Search and differential evolution. PSNR, mean, MSE, STD of fitness values, SSIM and total execution time parameters were considered for validating the experimental results. Kapoor, S. et. al. [11] presented Grey Wolf Optimizer Algorithm application for segmentation of satellite images. The implemented application is efficient and accurate with respect to average intra & inert cluster distance & DB index. Naeini, A. A. et. al. [12] used PSO in consort with minimum distance classifier for object based classification in satellite images with very high spatial resolution and compared the performance with honey-bee mating, artificial bee colony and genetic algorithm, and it outperformed all the other techniques. Jasmine, J., & Annadurai, S. [13] presented image enhancement of real time video by making use of PSO along with adaptive cumulative distribution. Liu, S. et al. [14] worked in the area of image segmentation by presenting an improved hybrid PSO. Gamshadzaei, M. H., & Rahimzadegan, M. [15] provided PSO based index for water spread area detection by using satellite images. Chang, Y. L. et al. [16] presented the application of PSO for band selection of hyperspectral images. The proposed method indicated better classification accuracy and dimensionality reduction rate.

3. Proposed Methodology

3.1 Particle Swarm Intelligence

Kennedy and Eberhart pioneered Particle Swarm Optimization algorithm [17] and it is based on swarm social behaviour. For obtaining the optimal solution, this algorithm put global best solution concept in use. Particles are generally referred as agents and are responsible for performing optimal solution search. The trajectories of the agents are adjusted by deterministic and stochastic component. The particles move randomly and are also influenced by its best achieved position and group position. The algorithm of PSO is represented as below [18].

1. *Input: Randomly initial particles are generated*
2. *Output: Fitness value along with optimal particle*
3. *Start: Initialization of swarm*
4. *Initialization of PSO parameters*
5. *Evaluation of all particles using FF by using eq.*
6. *While not met=termination criteria, do*
7. *Velocity update*
8. *Each position update*
9. *Fitness function evaluation*
10. *Worst particle are replaced by best particle*
11. *LB and GB update*
12. *End while*
13. *Informative features subset returned*

The fitness function used in PSO is represented as mean absolute difference is represented as equation (1) [18]. It represents the fitness function for solution i and $x_{i,j}$ is the value of the j feature.

$$MAD_{(xi)} = \frac{1}{a_i} \sum_{j=1}^t |X_{i,j} - \bar{X}_i| \quad (1)$$

$$\text{Where. } \bar{X}_i = \left(\frac{1}{a}\right) \sum_{j=1}^t X_{i,j} \quad (2)$$

PSO works on 2 main factors, represented in equation 3 as position update and equation 4 presents velocity update. [18]. Here LB_1 and GB_1 represents current local and global solutions at 1 iteration, $rand_1$ and $rand_2$ represents random numbers and are in the range of [0,1] and the constants are represented as c_1 and c_2 .

$$X_{ij} = X_{ij} + v_{ij} \quad (3)$$

$$\text{Where: } v_{i,j} = w * v_{ij} + c_1 * rand_1 * (LB_1 - x_{i,j}) + c_2 * rand_2 * (GB_1 - x_{i,j}) \quad (4)$$

The paper is to propose the application of Particle Swarm Optimization based edge detection for change detection in remote sensed data. The process followed in proposed methodology is depicted in Figure 1.

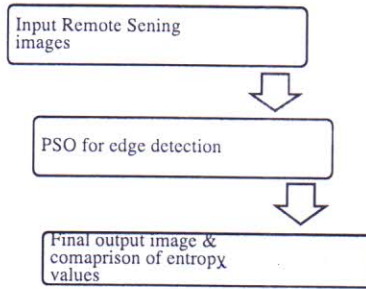

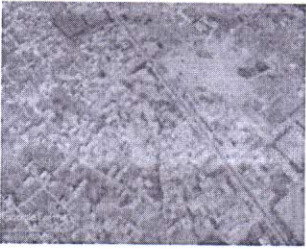

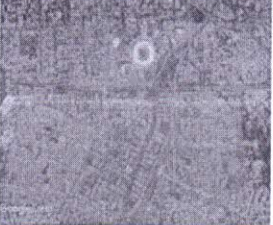




Figure 1: Proposed Methodology Flowchart


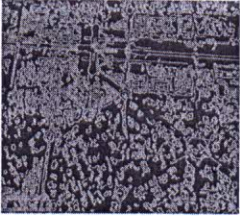

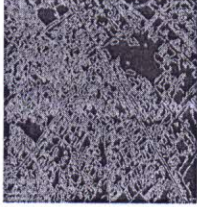

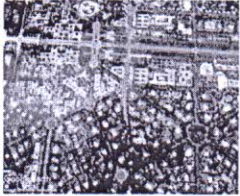



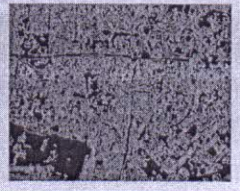
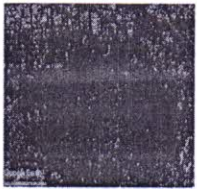


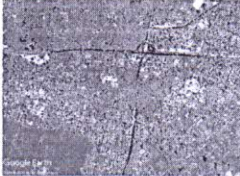



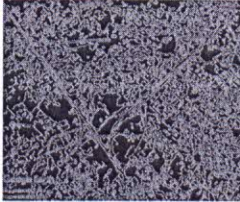

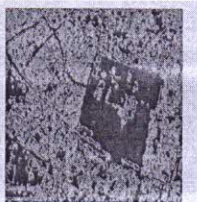

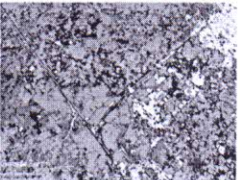
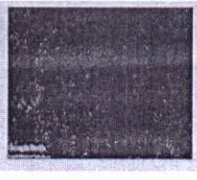
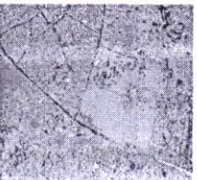
Table 1: Original Satellite images acquired from Google Earth

<p style="text-align: center;">Image A</p> 	<p style="text-align: center;">Image B</p> 	<p style="text-align: center;">Image C</p> 
<p style="text-align: center;">Image D</p> 	<p style="text-align: center;">Image E</p> 	<p style="text-align: center;">Image F</p> 

4. Result and Discussion

The method was executed on 06 satellite images acquired from Google Earth, represented in table 1. For every image, conventional edge detector operators such as sobel, canny and prewitt are being applied in MATLAB environment. In order to reveal more edges thereby improving the quality, particle swarm optimization based edge detection method is also implemented on the same set of images. The output images of sobel, canny, prewitt and PSO are depicted in table no 2. For evaluating the performance of all the methods, entropy value is computed and is being compared.

Table 2: Sobel, Canny, Prewitt and PSO based edge detection images for image A to F

IMAGE A		IMAGE B	
SOBEL 	CANNY 	SOBEL 	CANNY 
PREWITT 	PSO 	PREWITT 	PSO 
IMAGE C		IMAGE D	
A-SOBEL 	CANNY 	SOBEL 	CANNY 
PREWITT 	PSO 	PREWITT 	PSO 
IMAGE E		IMAGE F	
SOBEL 	CANNY 	SOBEL 	CANNY 
PREWITT 	PSO 	PREWITT 	PSO 

The entropy value can be calculated as per equation (5). Here, total grey area is given by L and p is the probability distribution at each level:

$$E = - \sum_{i=0}^L p_i \cdot \log_2 p_i \quad (5)$$

The entropy values for all the images in depicted in table no. and represented in figure no. From the table, it has been observed that the entropy value for image A are 0.2235, 0.5792, 0.2228 and 0.9251 for sobel, canny, prewitt and PSO based edge detector. The values for image B are 0.2025, 0.6307, 0.2007 and 0.8591. Similarly the entropy values for images C,D,E and F are represented. It has been observed that the highest entropy value is being provided by PSO based edge detection.

Table 3: Entropy values for Sobel, Canny, Prewitt & PSO

Image	Sobel	Canny	Prewitt	PSO
A	0.2235	0.5792	0.2228	0.9251
B	0.2025	0.6307	0.2007	0.8591
C	0.1872	0.7077	0.1841	0.8302
D	0.1908	0.7303	0.1899	0.8724
E	0.1754	0.6627	0.1726	0.8211
F	0.2116	0.6523	0.2091	0.8942

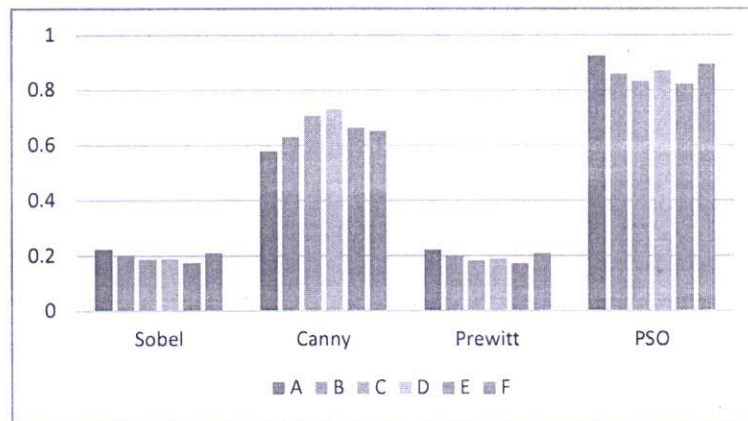


Figure 2: Representation of entropy value

5. Conclusion

Detection of edges in an image plays very important role in analysis of images. Satellite images are great repository of information, therefore it is very important to perform segmentation as this will help in better understanding with respect to change detection. In this paper, proposed PSO edge detection has been compared with sobel, canny and prewitt edge detection operators and it has been observed that PSO based edge detection has higher entropy values. High entropy value represents an image of better quality, hence supports better change detection.

References

- [1]. Khan, S. H., He, X., Porikli, F., & Bennamoun, M. (2017). Forest change detection in incomplete satellite images with deep neural networks. *IEEE Transactions on Geoscience and Remote Sensing*, 55(9), 5407-5423.
- [2]. Chakraborty, A., & Kar, A. K. (2017). Swarm intelligence: A review of algorithms. In *Nature-Inspired Computing and Optimization* (pp. 475-494). Springer, Cham.
- [3]. K. Y. Lee and J. Park, "Application of Particle Swarm Optimization to Economic Dispatch Problem: Advantages and Disadvantages," 2006 IEEE PES Power Systems Conference and Exposition, Atlanta, GA, 2006, pp. 188-192.
- [4]. Bhandari, A. K., Kumar, A., & Singh, G. K. (2015). Tsallis entropy based multilevel thresholding for colored satellite image segmentation using evolutionary algorithms. *Expert systems with applications*, 42(22), 8707-8730.
- [5]. Bhandari, A. K., Kumar, A., & Singh, G. K. (2015). Modified artificial bee colony based computationally efficient multilevel thresholding for satellite image segmentation using Kapur's, Otsu and Tsallis functions. *Expert Systems with Applications*, 42(3), 1573-1601.
- [6]. Senthilnath, J., Kulkarni, S., Benediktsson, J. A., & Yang, X. S. (2016). A novel approach for multispectral satellite image classification based on the bat algorithm. *IEEE Geoscience and Remote Sensing Letters*, 13(4), 599-603.
- [7]. Muangkote, N., Sunat, K., & Chiewchanwattana, S. (2016, July). Multilevel thresholding for satellite image segmentation with moth-flame based optimization. In *2016 13th International Joint Conference on Computer Science and Software Engineering (JCSSE)* (pp. 1-6). IEEE.
- [8]. Ryalat, M. H., Emmens, D., Hulse, M., Bell, D., Al-Rahamneh, Z., Laycock, S., & Fisher, M. (2016, September). Evaluation of particle swarm optimisation for medical image segmentation. In *International Conference on Systems Science* (pp. 61-72). Springer, Cham.
- [9]. Zhao, X., Turk, M., Li, W., Lien, K. C., & Wang, G. (2016). A multilevel image thresholding segmentation algorithm based on two-dimensional K-L divergence and modified particle swarm optimization. *Applied Soft Computing*, 48, 151-159.
- [10]. Suresh, S., & Lal, S. (2017). Multilevel thresholding based on Chaotic Darwinian Particle Swarm Optimization for segmentation of satellite images. *Applied Soft Computing*, 55, 503-522.
- [11]. Kapoor, S., Zeya, I., Singhal, C., & Nanda, S. J. (2017). A grey wolf optimizer based automatic clustering algorithm for satellite image segmentation. *Procedia computer science*, 115, 415-422.
- [12]. Naeini, A. A., Babadi, M., Mirzadeh, S. M. J., & Amini, S. (2018). Particle swarm optimization for object-based feature selection of VHRS satellite images. *IEEE Geoscience and Remote Sensing Letters*, 15(3), 379-383.
- [13]. Jasmine, J., & Annadurai, S. (2019). Real time video image enhancement approach using particle swarm optimisation technique with adaptive cumulative distribution function based histogram equalization. *Measurement*, 145, 833-840.
- [14]. Liu, S., Zhou, K., Qi, H., & Liu, J. (2019). Improved hybrid particle swarm optimisation for image segmentation. *International Journal of Parallel, Emergent and Distributed Systems*, 1-7.
- [15]. Gamshadzaei, M. H., & Rahimzadegan, M. (2019). Particle Swarm Optimization based Water Index (PSOWI) for Mapping the Water extents from Satellite Images. *Geocarto International*, (just-accepted), 1-14.
- [16]. Chang, Y. L., Ayele, A. A., Huang, M. Y., Yuan, H., Chang, L., & Chang, W. Y. (2019, July). Particle Swarm Optimization-Based Hotspot Analysis and Impurity Function Band Prioritization Using Multiple Attribute Decision-Making Model for Band

Selection of Hyperspectral Images. In IGARSS 2019-2019 IEEE International Geoscience and Remote Sensing Symposium (pp. 3808-3811). IEEE.

[17]. Kennedy, J., & Eberhart, R. (1995, November). Particle swarm optimization. In *Proceedings of ICNN'95-International Conference on Neural Networks (Vol. 4, pp. 1942-1948)*. IEEE.

[18]. Abualigah, L. M., Khader, A. T., & Hanandeh, E. S. (2018). A new feature selection method to improve the document clustering using particle swarm optimization algorithm. *Journal of Computational Science*, 25, 456-466

Handbook of Research of Internet of Things and Cyber-Physical Systems

An Integrative Approach to an Interconnected Future

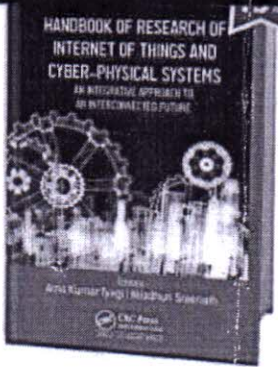
Editors: Amit Kumar Tyagi, PhD
 Senior Assistant Professor and Senior Researcher,
 Vellore Institute of Technology (VIT), Chennai Campus, India

Niladhuri Sreemath, PhD
 Senior Professor of Computer Science and Information Technology,
 Pondicherry Engineering College, affiliated to Pondicherry University, India

This new volume, **Handbook of Research of Internet of Things and Cyber-Physical Systems: An Integrative Approach to an Interconnected Future**, discusses how integrating IoT devices and cyber-physical systems can help society by providing multiple efficient and affordable services to users.

The book covers a multitude of topics in this area, including various applications of IoT-based cyber-physical systems in satellite imaging in relation to climate change, industrial control systems, e-healthcare applications, security uses, autonomous traffic monitoring and control, urban smart city planning, and more. The authors also outline the methods, tools, and approaches for IoT-based cyber-physical systems and explore the integration of machine learning, blockchain, and Internet of Things-based cloud applications.

With the continuous emerging new technologies and trends in IoT technology and CPS, this volume will be a helpful resource for scientists, researchers, industry professionals, faculty and students, practitioners who wish to keep abreast of new developments and new challenges for sustainable development in Industry 4.0.



CONTENTS

Preface

PART I: A JOURNEY FOR UNDERSTANDING INTERNET OF THINGS AND CYBER-PHYSICAL SYSTEMS

1. Overview of Role of Internet of Things, Cyber-Physical Systems, and Cloud Computing in Industry 4.0
Vijayalakshmi Srinivasan, and Vivek Anglin
2. Role of Internet of Things and Cyber-Physical Systems in Various Applications Like Satellite Imaging and Climate Change, Industrial Control Systems, E-Healthcare Applications, Etc.
Priyanka Tyagi, Jeevan Dinesh Kumar, and Ganesa Saini
3. Comparative Case Study on Smart City Versus Digital Urban Infrastructure
Harek Malhotra, Rohitwara, Mahalingappa Srinivasan, and Anuja Kumar Singh

PART II: SECURITY AND PRIVACY ASPECTS FOR IoT- AND CPS-BASED SYSTEMS

4. Securing the Future Autonomous Applications Using Cyber-Physical Systems and Internet of Things
S. Subasu, S. Krishna Prudh, T. Saravanasagar, and S. Sudha
5. Emerging Trends and Techniques in Machine Learning and Internet of Things Based Cloud Applications
Shashik Mishra and Anil Kumar Tyagi
6. An Efficient Implementation of a Blockchain-Based Smart Grid
Kanwal Shah
7. An Integrative Approach of IoT and Cyber-Physical System for Security Perspective
Kharibon Triyanti, Deepshikha Agarwal, and Kumar Kishan
8. Path Planning and Optimization
Prasad Patel, Vandana Kishore-Gautam, and Arpit Jain

PART III: FUTURE WITH INTERNET OF THINGS AND CYBER-PHYSICAL SYSTEMS

9. Smart Cities and Urbanization: The Edge of Machine Learning and IoT
Gösta Rohlin
10. Need for Lightweight Attribute-Based Encryption (ABE) for Cloud-Based IoT
Keerti Narayan and Vijay Kulkarni



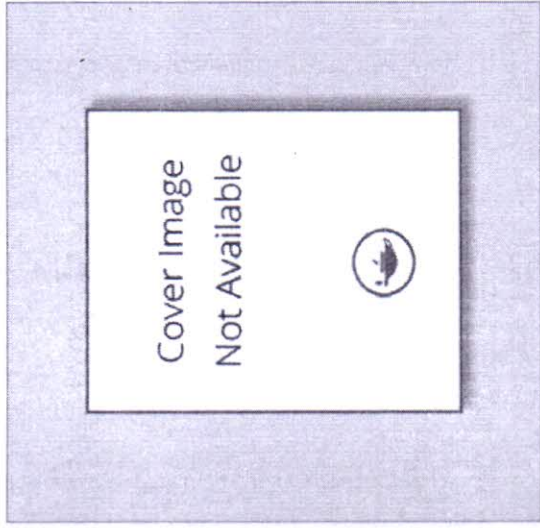
US office: 1285 Boulevard Circle #E,
 Palm Bay, FL, 32909
 Tel: 732-859-0300 / Fax: 888-222-9549
 Email: info@appleacademicpress.com

Canadian office: 4168 Lakeshore Road
 Burlington, ON L7L 1A1 Canada
 Tel: 289-937-6300, Fax: 855-222-9549
 Email: info@appleacademicpress.com

Chapter on IOT is published in AAP(Apple Academic Press).

Products Search by keywords, subject, or ISBN

15% Off eBooks or 25% Off When You Buy 2 or More



1st Edition

Handbook of Research of Internet of Things and Cyber-Physical Systems

An Integrative Approach to an Interconnected Future

Edited By *Amit Kumar Tyagi, Niladhuri Sreenath*

Copyright Year 2022

Available for pre-order. Item will ship after June 9, 2022

ISBN 9781774638347

June 9, 2022 Forthcoming by Apple Academic Press

680 Pages 38 Color & 162 B/W Illustrations

Format	Hardback	Quantity	1
		GBP £193.00	

JOIN OUR MAILING LIST
NEWS & EVENTS
CATALOG & TITLE LISTS
LOG IN

Publishing quality books in STEM and other fields

Home | About Us | Conference Schedule | AAP Research Notes | Ordering Info | Publish With Us | Contact Us



Agriculture & Allied Sciences
Allied Health
Animal Studies & Veterinary Sciences
Anthropology
Archaeology
Bioinformatics
Biology
Biomedical Engineering/Nanotechnology
Biotechnology
Business Management
Chemical Engineering
Chemistry
Cheminformatics
Computer Science & Information Management
COVID and Pandemic Issues
Economics & Finance
Education
Electronics and Communications Technology
Energy Science
Engineering
Environmental Health
Environmental Science/Climate Change & Mitigation
Fisheries Science & Marine Biology
Food Chemistry & Science
Hospitality & Tourism
Law
Library & Information Science
Materials Science
Mathematics
Mechanical Engineering
Media & Communications
Medicine & Health Sciences

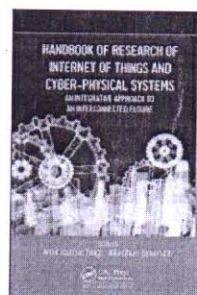
Electronics and Communications Technology

Handbook of Research of Internet of Things and Cyber-Physical Systems

An Integrative Approach to an Interconnected Future

Editors: Amit Kumar Tyagi, PhD
Niladhuri Sreenath, PhD

[Ordering Info/Buy Book](#)



In Production
Pub Date: January 2022
Hardback Price: \$249.95 USD | £193.00
Hard ISBN: 9781774638347
Pages: Approx. 602p w/index
Binding Type: Hardback
Notes: 37 color and 159 b/w illustrations

This new volume, *Handbook of Research of Internet of Things and Cyber-Physical Systems: An Integrative Approach to an Interconnected Future*, discusses how integrating IoT devices and cyber-physical systems can help society by providing multiple efficient and affordable services to users.

The book covers a multitude of topics in this area, including the various applications of IoT-based cyber-physical systems, such as satellite imaging in relation to climate change, industrial control systems, e-healthcare applications, security uses, automotive and traffic monitoring and control, urban smart city planning, and more. The authors also outline the methods, tools, and algorithms for IoT-based cyber-physical systems and explore the integration of machine learning, blockchain, and Internet of Things-based cloud applications.

With the continuous emerging new technologies and trends in IoT technology and CPS, this volume will be a helpful resource for scientists, researchers, industry professionals, faculty and students, and others who wish to keep abreast of new developments and new challenges for sustainable development in Industry 4.0.

CONTENTS:

Preface

PART I: A JOURNEY FOR UNDERSTANDING INTERNET OF THINGS AND CYBER-PHYSICAL SYSTEMS

1. Overview of Role of Internet of Things and Cyber-Physical Systems in Various Applications

Varsha Bhatia, Sunita Kumawat, and Vivek Juglan

2. Role of Internet of Things and Cyber-Physical Systems in Various Applications Like Satellite Imaging and Climate Change, Industrial Control Systems, E-Healthcare Applications, Etc.
Priyanka Tyagi, Javalkar Dinesh Kumar, and Garima Saini

3. Comparative Case Study on Smart City Versus Digital City
Hitesh Mohapatra, Balajee Rm, Hidangmayum Saxena Devi, and Amiya Kumar Rath

PART II: METHODS, TOOLS, AND ALGORITHMS FOR IoT-BASED CYBER-PHYSICAL SYSTEMS

4. Securing the Future Autonomous Applications Using Cyber-Physical Systems and Internet of Things

S. Sobana, S. Krishna Prabha, T. Seerangurayar, and S. Sudha

5. Emerging Trends and Techniques in Machine Learning and Internet of Things Based Cloud Applications

Free
standard
shipping
worldwide

Sign Up
for email
alerts

Follow us for the latest from Apple Academic Press:



The AAP Blog

"Best Marine Biology Books of All Time" by BookAuthority . .

. Congratulations to Dr. Ramasamy Santhanam for 3 books on this prestigious list:

- Biology and Ecology of Venomous Stingrays
- Biology and Culture of Portunid Crabs of World Seas
- Biology and Ecology of Edible Marine Gastropod Molluscs

Comments from Our Editors and Author

"I'm very pleased with the books you have edited. It shows a very good and careful work by everyone involved along the whole production process, and so the final result is a beautiful piece: it has come out as a very nice and appealing book, easy to handle and read, and hopefully of interest for people from diverse related fields!" – Enrique Macia-Barber, PhD, Professor of Condensed Matter Physics, Universidad Complutense de Madrid, Spain; Author of *The Chemical Evolution of Phosphorus: An Interdisciplinary Approach to Astrobiology*

"As the Principal Editor for the trending 3-volume set book of *Phytochemistry*, I wish to express my sincere gratitude to the management of AAP for their excellent publishing services. Our publishing experience is

Nanomedicine
Nanotechnology
Nutrition, Dietetics & Health
Pharmaceutical Science & Technology
Physics
Plant Science & Botany
Polymer Science
Psychology, Psychiatry & Mental Health
Security & Disaster Management
Social Work & Social Welfare
Soil & Water Conservation
Urban Planning
Viticulture & Enology
Waste Management
Water Management
Women & Gender Studies
21st Century Business Management
AAP Advances in Artificial Intelligence and Robotics
AAP Focus on Medicinal Plants Series
AAP Research Notes on Chemical Engineering
AAP Research Notes on Chemistry
AAP Research Notes on Nanoscience and Nanotechnology
AAP Research Notes on Operations and Supply Chain Management
AAP Research Notes on Optimization and Decision Making Theories
AAP Research Notes on Polymer Engineering Science and Technology
AAP Series on Digital Signal Processing, Computer Vision and Image Processing
Advances in Hospitality and Tourism
Advances in Materials Science
Advances in Nanoscience and Nanotechnology
Applied Chemistry and Chemical Engineering
Biology and Ecology of Marine Life
Biomedical Engineering: Techniques and Applications Book Series
Current Advances in Biodiversity, Conservation and Environmental Sciences

Shashvi Mishra and Amit Kumar Tyagi

6. An Efficient Implementation of a Blockchain-Based Smart Grid
Kaushal Shah

7. An Integration Approach of IoT and Cyber-Physical System for Security Perspective
Khushboo Tripathi, Deepshikha Agarwal, and Kumar Krishen

8. Path Planning and Optimization
Pranjal Paul, Venkata Krishna Guntuka, and Arpit Jain

PART III: FUTURE WITH INTERNET OF THINGS AND CYBER-PHYSICAL SYSTEMS

9. Smart Cities and Urbanization: The Urge of Machine Learning and IoT
Gillala Rekha

10. Need for Lightweight Attribute-Based Encryption (ABE) for Cloud-Based IoT
Keerti Naregal and Vijay Kalmani

11. Internet of Things (IoT) Enabled Smart Bus Information System
Deniz Fahmy Chalaby, Aram Luqman, Ibrahim Idrees, Abdulsamad Salam, Ahmed Abdulkhalq, Kayhan Zrar Ghafoor, and AOs Mulahuwaish

PART IV: FUTURE ROADMAP, OPPORTUNITIES WITH INTERNET OF THINGS BASED SYSTEMS

12. A Roadmap towards Robust IoT-Enabled Cyber-Physical Systems in Cyber Industrial 4.0
M. Parimala Devi, Mani Deepak Choudhry, G. Boopathi Raja, and T. Sathya

13. Machine Learning Based Intrusion Detection for Internet of Things Network Traffic
Vergin Raja Sarobin M, Rukmani Panjanathan, and E. A. Mary Anita

14. A New Compromising Security Framework for Automated Smart Homes Using VAPT
Y. V. Akileswar Reddy, Ch. Ajay Kumar, P. Rukmani, and Sannasi Ganapathy

15. Maneuvered Network Traffic Profiling
C. Aravindan, Terrance Frederick Fernandez, and O. Bhuvanewari

PART V: SECURITY REQUIREMENTS, ISSUES WITH INTERNET OF THINGS, AND CYBER-PHYSICAL SYSTEMS

16. Security Enhancement and Trust Management Algorithm in D2d (VANET) for 5G-Based Network
T. Perarasi, M. Leeban Moses, and S. Vidhya

17. Addressing the Security, Privacy, and Trust Issues in IoT-Enabled CPS
Meenu Gupta, Akash Gupta, and Simrann Arora

18. Security and Privacy Aspects in Internet of Things (IoT) and Cyber-Physical Systems (CPS)
Hiral S. Trivedi and Sankita J. Patel

19. Security Outlook of IoT-Cloud Integration with 5G Networks
Neetu Faujdar and Yashita Verma

20. Security Threats in IoT with Special Emphasis on Blockchain
R. Ravinder Reddy, R. Hriya, Ch Mamatha, and S. Ananthakumaran

PART VI: CHALLENGES IN FUTURE FOR INTERNET OF THINGS AND CYBER-PHYSICAL SYSTEMS

21. Challenges for Sustainable Development in Industry 4.0
Anbesh Jamwal, Sumedha Bhatnagar, Rajeev Agrawal, and Monica Sharma

22. Opportunities and Challenges of Cyber-Physical Transportation Systems
Sapna Jain, M. Afshar Alam, Gulsun Kurubacak, and Nevine Makram Labib

23. Data Science and Data Analytics for IoT Tools
Rasmeet Kaur, Dharminder Yadav, and Avinash Sharma

Index

ABOUT THE AUTHORS / EDITORS:

Editors: Amit Kumar Tyagi, PhD
Senior Assistant Professor and Senior Researcher, Vellore Institute of Technology (VIT), Chennai Campus, India

Amit Kumar Tyagi, PhD, is currently Senior Assistant Professor and Senior Researcher at the Vellore Institute of Technology, Chennai Campus, India. He was formerly affiliated the Lord Krishna College of Engineering, Ghaziabad, India, and was formerly an Assistant Professor and Head of Research at Lingaya's Vidyapeeth (formerly known as Lingaya's University), Faridabad, Haryana, India. His current research focuses on machine learning with big data, blockchain technology, data science, cyber-physical systems, smart and secure computing, and privacy. He has contributed to several projects such as AARIN

positive, and the outcome of the book is one that is attracting lots of interests and recommendations from eminent scientists and research scholars worldwide. Our students, who are privileged to be the first users of the book, are very happy with the simplicity of the chapters. I also wish to express my happiness about the robust distribution channel of AAP and, more especially, the print quality of our book. I look forward to working with AAP again."—
Chukwuebuka Egbuna (MNSBMB, MICCON, AMRSC), Department of Biochemistry, Chukwuemeka Odumegwu Ojukwu University, Uli-Campus, Anambra State, Nigeria

"I would like to thank Dr. Mahmood Khan and AAP warmly for offering me the opportunity to publish my book *Sustainable Viticulture: The Vines and Wines of Burgundy*. I found a lot of pleasure in reflecting on my experience and observations as a viticulturist in Burgundy and other regions of the world. I enjoyed putting in writing thoughts, memories, and ideas I've had for years. I also found pleasure in synthesizing discussions I've had with wine professionals and wine buffs as well as reading notes I regularly jotted down. I can also add that I very much appreciated the friendly and firm support and guidance of the staff of Apple Academic Press." —
Claude Chapuis, Associate Professor, School of Wine & Spirits Business, Dijon, France

"I was recently thrilled to flip the pages of my new book, *Polymeric Thermosetting Polymers*. This book shares a lifetime of lessons from my pioneering efforts in compound custom formulating. That is why I am so very grateful to AAP for making it possible to get this unique book into worldwide circulation. The expert team at AAP made the experience of writing, organizing, and polishing the book quite enjoyable." —
Ralph D. Hermansen, Formerly Senior Scientist, Hughes Aircraft Company, El Segundo, California

"Glad to see the final outcome of the book. It was truly wonderful & smooth experience to work with AAP. Definitely, looking forward to more exciting and fruitful association in future." —
Arvind K. Birdie, PhD, Associate Professor and Acting Principal, IIMT School of Management (Oxford Brooks University), Gurgaon, India; Author of Organizational

Electronic Commerce Management for Business
Focus on Artificial Intelligence and Cybersecurity
Frontiers of Mechanical and Industrial Engineering
Innovation Management and Computing
Innovations and Challenges in Micro Irrigation
Innovations in Agricultural and Biological Engineering
Innovations in Biotechnology
Innovations in Chemical Physics and Mesoscopy
Innovations in Computational Chemistry
Innovations in Horticultural Science
Innovations in Physical Chemistry: Monograph Series
Innovations in Plant Science for Better Health: From Soil to Fork
Modern Trends in Molecular Biology
Postharvest Biology and Technology
Research Advances in Sustainable Micro Irrigation
Research Notes on Computing and Communication Sciences

and P3-Block to address some of the open issues related to the privacy breaches in vehicular applications (such as parking) and medical cyber-physical systems. Also, he has published more than eight patents in the area of deep learning, Internet of Things, cyber-physical systems, and computer vision. Recently, he has received a best paper award for paper titled "A Novel Feature Extractor Based on the Modified Approach of Histogram of Oriented Gradient" at the International Conference on Computational Science and Applications (ICCSA-2020, Italy). He is a regular member of ACM, IEEE, MIRLabs, Ramanujan Mathematical Society, Cryptology Research Society, and Universal Scientific Education and Research Network, CSI and ISTE. Dr. Tyagi received his PhD degree from Pondicherry Central University, India.

Niladhuri Sreenath, PhD
Senior Professor of Computer Science and Information Technology, Pondicherry Engineering College, affiliated to Pondicherry University, India

Niladhuri Sreenath, PhD, is a Senior Professor of Computer Science and Information Technology at Pondicherry Engineering College, affiliated to Pondicherry University, India. His primary research interests lie in WDM optical networks and privacy and trust. He has published a number of journal articles, conferences papers, and book chapters. He obtained his PhD in Computer Science from the Indian Institute of Technology, Madras, India.

Behavior and Virtual Work

"Publishing with Apple Academic Press has been by far my very best publishing experience. I have published close to a hundred articles and books in my life. I have never seen a team of such committed professionals. I feel that everyone at AAP really cares about my book and goes the extra mile to make sure that the book will be a success. I wholeheartedly recommend anyone to consider publishing with Apple Academic Press."—
Julian Hermida, Associate Professor of Law and Justice, Algoma University

"Working with Apple Academic Press was a rewarding and collaborative experience. Effort was made to truly understand what we hoped to accomplish in publishing our work, and the team was responsive and receptive to our queries, feedback, and revisions. The high quality of the final product and its success is a reflection on the quality of the partnership we experienced with AAP in realizing this project."—
Caitlin Gillan, Asst Professor, University of Toronto

"I have published more than two hundred and thirty articles and thirteen book chapters and monographs in my life. Publishing with Apple Academic Press has been by far my very best experience. AAP is extremely cordial at every state of book processing, highly professional in maintaining the quality and meeting the deadlines. I wholeheartedly recommend anyone to consider publishing with AAP."
 — Benjaram M. Reddy, Chief Scientist & Head, CSIR - Indian Institute of Chemical Technology, Hyderabad



(<https://www.scrs.in/>)

SOFT COMPUTING RESEARCH SOCIETY

Registered under the societies registration act XXI of 1860

[Login \(https://www.scrs.in/account/login\)](https://www.scrs.in/account/login)

[Register \(https://www.scrs.in/account/register\)](https://www.scrs.in/account/register)

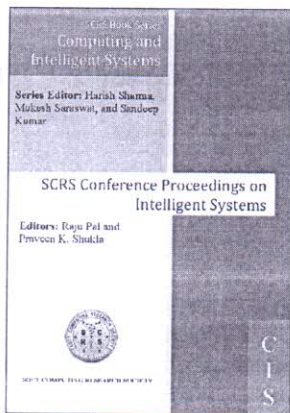
MENU

[Google Search](#)

[Search](#)

[Home \(https://www.scrs.in/\)](https://www.scrs.in/) / [Computing and Intelligent Systems \(https://www.scrs.in/page/computing-and-intelligent-systems\)](https://www.scrs.in/page/computing-and-intelligent-systems)

COMPUTING AND INTELLIGENT SYSTEMS ([HTTPS://WWW.SCRS.IN/PAGE/COMPUTING-AND-INTELLIGENT-SYSTEMS](https://www.scrs.in/page/computing-and-intelligent-systems))



SCRS CONFERENCE PROCEEDINGS ON INTELLIGENT SYSTEMS

Editors: Raju Pal and Praveen K. Shukla

Soft Computing Research Society's publication of the book

ISBN: 978-93-91842-08-6

DOI: <https://doi.org/10.52458/978-93-91842-08-6> (<https://doi.org/10.52458/978-93-91842-08-6>)

<https://>

[G+H](#)

[h#](#)

<http://>

[Comp](#)

[About the Book](#) [About the Editors](#) [For Authors and Conference Organisers](#)

This book presents the collection of the accepted research papers presented in the Conference on Intelligent Vision and Computing, 2021 and Conference on Intelligent Systems, 2021. In addition, this edited book contains articles related to the themes of business intelligence, artificial intelligence, data analysis, fake news detection, natural language processing, neural network, and cognitive computing.

Chapters

1. A Deliberation on the Stages of Artificial Intelligence
2. CONCISE: An Algorithm for Mining Positive and Negative Non-Redundant Association Rules
3. Prediction and Analysis of Recurrent Depression Disorder: Deep Learning Approach
4. Women's Shield
5. Fake News Detection Using Machine Learning Technique
6. Ontology Formation and Comparison for Syllabus Structure using NLP
7. Development of Multiple Combined Regression Methods for Rainfall Measurement
8. Digital Building Blocks using Perceptrons in Neural Networks
9. Cognitive Computing and its Relationship to Computing Methods and Advanced Computing from a Human-Centric Functional Modeling Perspective
10. Automated Attendance System with Facial Recognition Using Python
11. Algorithm Design for Deterministic Finite Automata for a Given Regular Language with Prefix Strings
12. Development of Artificial Intelligence based Chatbot Using Deep Neural Network

Chapters

13. PALS - Precision Agriculture using Local Server
14. A Study on Management of Artificial Intelligence in Green Manufacturing with Special Reference to TVS Motor Company, Hosur, Tamil Nadu, India
15. Crowd Management and Monitoring using Deep Convolutinal Neural Network
16. Performance Comparison of ML Regression Algorithms in Predicting Supermarket Sales
17. Artificial Intelligence: The Future of Employment
18. Performance Evaluation for Detection of Cardiovascular Disease using Different Methods
19. A Review on Quality of Image during CBIR Operations and Compression

LATEST NEWS

NEW PCCDS 2022 | JULY 05-07, 2022

Feb 01, 2022

Malaviya National Institute of Technology Jaipur, India is going to organize the Third International Conference on Paradigms of Communication, Computing and Data Sciences (PCCDS 2022) ...

[Read more...](https://www.scrs.in/news/pccds-2022-july-05-07-2022) (<https://www.scrs.in/news/pccds-2022-july-05-07-2022>)

AIC 2022 | IEEE Conference | June 17-19, 2022

Oct 17, 2021

Rajkiya Engineering College, Sonbhadra and Soft Computing Research Society are organizing the World Conference on Applied Intelligence and Computing (AIC 2022) in Virtual Format (due to the ongoing ...

[https://](https://www.scrs.in/news/aic-2022-ieee-conference-june-17-19-2022)

[Read more...](https://www.scrs.in/news/aic-2022-ieee-conference-june-17-19-2022) (<https://www.scrs.in/news/aic-2022-ieee-conference-june-17-19-2022>)

SocProS 2022 | May 14 - 15, 2022

Jan 11, 2022

Indian Institute of Technology Mandi, Himachal Pradesh, India is organizing 11th International Conference on Soft Computing for Problem Solving (SocProS 2022) during May 14 - 15, ...

[https://](https://www.scrs.in/news/socpros-2022-may-14-15-2022)

[Read more...](https://www.scrs.in/news/socpros-2022-may-14-15-2022) (<https://www.scrs.in/news/socpros-2022-may-14-15-2022>)

[Comp](https://www.scrs.in/news/socpros-2022-may-14-15-2022)

CVR 2022 | MAY 21-22, 2022

Jan 11, 2022

Babu Banarasi Das University Lucknow, India is going to organize the International Conference on Computer Vision and Robotics (CVR 2022) in technical support of Soft Computing Research Society (SCRS) from MAY 21-22, 2022. The CVR...

[Read more...](https://www.scrs.in/news/cvr-2022-may-21-22-2022) (<https://www.scrs.in/news/cvr-2022-may-21-22-2022>)

ICAIAA 2022 | APRIL 23-24, 2022

Jan 11, 2022

Poornima College of Engineering, Jaipur is going to organize the 3rd International Conference on Artificial Intelligence: Advances and Applications (ICAIAA 2022) in Virtual Format during April 22-23, 2022. The...

[Read more...](https://www.scrs.in/news/icaiaa-2022-april-23-24-2022) (<https://www.scrs.in/news/icaiaa-2022-april-23-24-2022>)

[See all \(https://www.scrs.in/news\)](https://www.scrs.in/news)

ABOUT SCRS

To promote research in soft computing and allied areas, Soft Computing Research Society (SCRS) is established in 2013 with its headquarter in Delhi, India. [Read More...](https://www.scrs.in/page/about-scrs) (<https://www.scrs.in/page/about-scrs>)

NEWSLETTER SUBSCRIBE

Email Address :

SUBMIT

Follow Us :

My books

Shop

Audiobooks

Comics

Account

Payment methods

My subscriptions

Redeem

Buy gift card

My wishlist

My Play activity

Parent Guide



Emerging Business Practices and Trends During COVID-19

Dr. Amit Verma Dr. Satinder Kumar Oct 2021
Book Rivers

Add to Wishlist

Free sample

₹236-00 ₹165.20 Ebook

COVID-19 Pandemic and the Worldwide locked down has influenced the businesses at global level. There are obviously interruptions in manufacturing, sales, employment, cash flow, and other aspects. In addition, constraints such as access to finance, lack of managerial expertise, inadequate liquidity, weak cash flow, infrastructure, risks and potential adverse decisions hinder access to credit. For growth and sustainability, businesses need to develop good practices and management skills.

ADDITIONAL INFORMATION

Publisher	Seller	Published on
Book Rivers	Google Ireland Ltd	Oct 23, 2021
Pages	ISBN	Features
496	9789390548965	Original pages
Best for	Language	Genres
web, tablet, phone, eReader	English	Antiques & Collectibles / Books
Content protection	Report	
This content is DRM protected.	Flag as inappropriate	

READING INFORMATION

Smartphones and Tablets

Install the Google Play Books app for Android and iPad/iPhone. It syncs automatically with your account and allows you to read online or offline wherever you are.

Laptops and Computers

You can read books purchased on Google Play using your computer's web browser.

eReaders and other devices

To read on e-ink devices like the Sony eReader or Barnes & Noble Nook, you'll need to download a file and transfer it to your device. Please follow the detailed Help center instructions to transfer the files to supported eReaders.

Artificial Intelligence: The Future of Employment

SCRS Dr. Anisha Tandon¹ and Dr. Shalu Tandon^{2*}

¹ Assistant Professor, Jagannath International Management School, Vasant Kunj, Delhi, India

¹ Assistant Professor, Jagannath International Management School, Vasant Kunj, Delhi, India

¹84.anisha@gmail.com, ²shalutandon1979@gmail.com

Abstract

Artificial Intelligence is the theory and growth of computer systems, which can do jobs that generally needed human intelligence, such as decision-making, visual perception, speech recognition, and translation between languages. In this paper, an essential matter regarding AI has been taken up. There is rising concern among people that AI will be taking up jobs as it is doing an outstanding job in every field. A typical example is chatbots; chatbots do the work of the individual working as Customer Care and doing partial jobs on behalf of humans. In few companies, it is handling the whole career of the humans.

A simple example is Digi bank. If we do not learn about AI in the coming Future, Futrell not be surprising that the outcome of a specific business will suffer, or we may not have jobs, as AI will be a better substitute than we will. Therefore, here in this paper, the idea of promoting the study of AI is discussed using AI teaching centers.

Keywords: AI, Innovation, Automation, Technology, Future

1 Introduction

Job loss concerns related to Artificial intelligence have been a matter in many business and academic areas. A study at Oxford says that more than 0.47 of America's information will be threatened by job loss by 2030. Other sources like World Economic Forum say that AI's automation will replace more than 75 million jobs by 2022. As per another report, AI-bases robots could replace 0.3 of the current global workforce of people. As per the AI expert and Venture Capitalist Kai-Fu Lee, 0.4 of the world jobs will be replaced by AI in the near decade. The lower worker class will be the one to be affected most. We cannot be light-headed just by assuming that the lower-income group will only be the one to be involved. The growth is in leaps and bounds, so it is not a surprising possibility that AI may even take the jobs that require high order skills like surgery as AI would be providing more accuracy than a mere human being. Sadly, that I the cruel truth. We have created machines better than we do.

Few counter-measures that can be taken in this regard are -

- We can bring changes to the education system. We can teach more about AI because if innovation and creativity come up, there will be the slightest concern about jobs as people will be educated to work with AI.
- If the government and private sectors join up and provide education, then there will be lot number of trained intellectuals, and thus there will be overall growth of humanity.
- If we build the gap between demand and supply, there will be more freelancers coming up, which is the demand of the new era. [1]

2 Issue Related To Artificial Intelligence

An approach to solve this problem is to inspect the impact of technology-based breakthroughs on labor markets in previous industrial revolutions. For example, the origination of automobiles in routine life caused a reduction in horse-associated jobs, but recent industries also come out with a net constructive effect on employment. The automobile industry itself grew speedily, generating numerous new jobs. Still, another sector also expanded due to the growing amount of vehicles on the roads, and countless new jobs in the motel and fast food industries arose to serve motorists and truck drivers. [2-4]

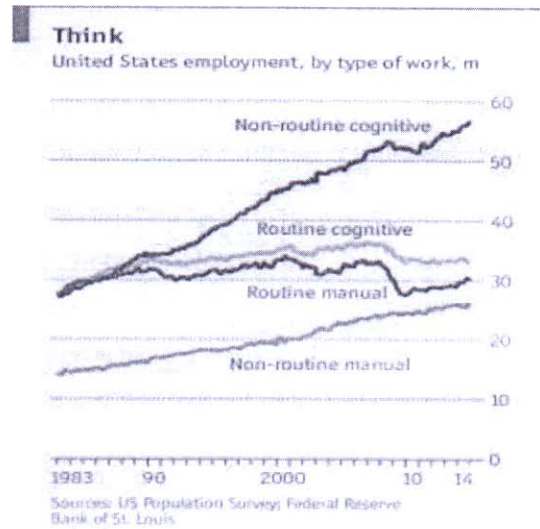


Fig. 1. From Forbes survey [5]

This graph shows the loss of jobs of people in the United States according to the respective sector. This graph shows AI has gradually taken over people's careers.

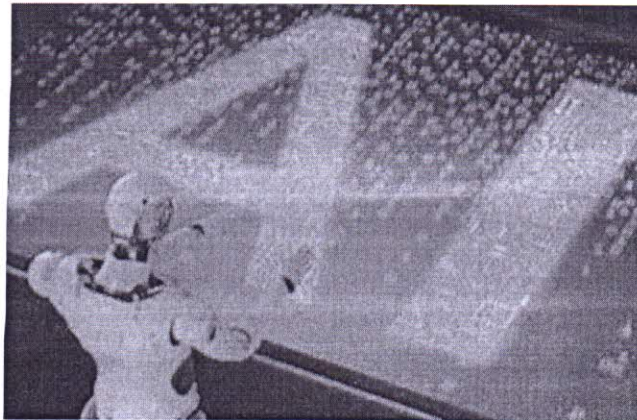


Fig 2. Jobs did by AI

3 Future

a.) Training Displaced Workers:

Today's focus is given to process and not driven by people; if the focus is on AI, then AI can learn processes and replace humans. Positions just as manufacturing and sales can be quickly taken over. AI will make this job trivial in the Future. The future way to work with AI is with interaction so that jobs such as of manager. Robots need to do jobs that can be automated, and humans need to do the position require a mental effort and creative finish. [5]

b.) Maybe Everyone Will Not Work: -

As discussed above, it is an opinion that not everyone will work in the Future; the Future will take the process-driven roles. This would lead to a higher unemployment rate, which would create a significant impact on finance and morale on macro and micro levels. If the idea of the skills to be taught is lacking then people, encouraging will be difficult.

The impacts of this possibility may lead to severe blows. People would have to find work for displaced workers to contribute and make a difference, even in a little. Perhaps it will be more of a sci-fi situation where only people who want to work will work. Robots will do rest tasks, and others can do anything. That may sound a bit exaggerating, but who knows what the future store for us. AI and robots are the inevitable Future. Future plays a role in everyone's future jobs, whether that means they make it easier or take it. We need to take quick steps so that the problem would lead to a disaster future.

c) The Technologies Create New Jobs for Both the Short and Long-Term:

The Future is the 'unknown,' so we can predict what will happen. We do not if skill sets will be of any relevance in the Future; futures may open a path for innovation. If this is the case, displaced workers could take up new jobs. However, it will also encourage those AI will replace to acquire new methods of skill set to work in harmony with the AI. Skills such as empathy and compassion are always needed because robots cannot replicate those skills. However, new inventions could open the door to other hard skills required and in high demand in the Future. Future also has an opinion that managerial roles and human skills will still be required [8].

4 Solution

- We are teaching people about AI through coaching centers because if AI takes jobs, it will relatively open job opportunities too. Thus, jobs as AI tutors as well as people working with AI will increase. Sophisticated jobs like surgery, if done with the help of AI, then accuracy will be improved. Thus, there is a wider need for people who can teach others to live in a machine-equipped environment.
- Promoting management qualities: This will be the basic need of the people because if AI does labor work, then work left will be machine handling and strategy planning.
- In the Future, Futures can take more of a cyber-turn. AI cannot do all of this work because it would give rise to security threats. This is a typical example. Even though AI will take over jobs, but other opportunities will come up. Still, to stand in such competition, the knowledge of AI will be inevitably essential. Therefore, setting up coaching centers by government or privately will benefit the economy and guide for stronger Future future micro and macro level.[6-7]

5 Conclusion

Artificial Intelligence technology is one important side of life that always interests and amazes us with the new concepts, themes, fields, innovations, products, etc. AI is not implemented as the films act for it (i.e., intelligent robots), but there are several significant tries to reach the extent and to take part in the market, such as, at times, the robots that they display on TV. Lastly, we have been researching the AI definitions, short history, and applications of AI in the military, applications of AI in public, principles of AI, and various rules of robotics. It is not closing of AI; there is much more to come out from it; who knows what the AI can do in the future.

References

- [1] <https://bruegel.org/wp-content/uploads/2018/07/Impact-of-AI-Petrouopoulos.pdf>
- [2] 2. Acemoglu, D. and P. Restrepo (2017), Robots and Jobs: Evidence from US Labour Markets, NBER Working Paper 23285, <http://www.nber.org/papers/w23285.pdf>.
- [3] 3. Arntz, M., T. Gregory and U. Zairean (2016), The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis 189, Paris: Organisation for Economic Co-operation and Development.
- [4] Autor, D., F. Levy and R. J. Murnane (2003), 'The Skill Content of Recent Technological Change: An Empirical Exploration,' *Quarterly Journal of Economics*, 118(4): 1279–333, <http://www.jstor.org/stable/pdf/25053940.pdf>.
- [5] THE FORBES, the technology section
- [6] R. Brafman, U. Junker (Orgs.), conjunction with IJCAI-05, Edinburgh, July 31–Aug. 1, 2005.
- [7] U. Junker, W. Kiessling (Orgs.), workshop, at ECAI-06, Riva del Garda, Aug. 28–29, 2006.
- [8] Jahanzaib Shabbir, and Tarique Anwer, Artificial Intelligence and its Role in Near Future, *Journal of Latex Class Files*, 2015



All



ADVANCED SEARCH

Quick Links

Search for Upcoming Conferences
Browse Conferences > Electronics and Sustainable Co... > 2021 Second International Conf...
IEEE Publication Recommender

IEEE Author Center

Electronics and Sustainable Communication Systems (ICESC), 2020

Proceedings

The proceedings of this conference will be available for purchase through Curran Associates.

Electronics and Sustainable Communication Systems (ICESC), 2021 Second International Conference on

DVD Purchase at Partner

Copy Persistent Link Browse Title List Sign up for Conference Alerts
Print on Demand Purchase at Partner

Proceedings All Proceedings Popular

2021 Second International Conference on Electronics and Sustainable Communication Systems (ICESC) DOI: 10.1109/ICESC51422.2021
4-6 Aug. 2021

Search within results

Per Page: 1 Per Page 25 Export Email Selected Results

Showing 126-150 of 337

sort: Sort Sequence

Email

Refine

Author

Affiliation

Conference Location

Deepfake Detection Using SVM
Harsh Agarwal; Ankur Singh; Rajeswari D
Publication Year: 2021, Page(s): 1245 - 1249

Abstract HTML

Deepfake Detection Using SVM
Harsh Agarwal; Ankur Singh; Rajeswari D
2021 Second International Conference on Electronics and Sustainable Communication Systems (ICESC)
Year: 2021

Real-time Covid-19 Face Mask Detection with YOLOv4
Rutuja R. Mahurkar; Naresh G. Gadge
Publication Year: 2021, Page(s): 1250 - 1255


















Abstract HTML

Real-time Covid-19 Face Mask Detection with YOLOv4

Need Full-Text access to IEEE Xplore for your organization? REQUEST A FREE TRIAL

Quick Links

Search for Upcoming Conferences
IEEE Publication Recommender
IEEE Author Center

- Genetic Algorithm Implementation for Improved Change Detection on Remote Sensed Data** 
Snehlata; Neetu Mittal; Alexander Gelbukh
Publication Year: 2021 , Page(s): 1372 - 1377
 - ▶ Abstract [HTML](#)  
- Genetic Algorithm Implementation for Improved Change Detection on Remote Sensed Data** 
Snehlata; Neetu Mittal; Alexander Gelbukh
2021 Second International Conference on Electronics and Sustainable Communication Systems (ICESC)
Year: 2021
- Application of Students' Cognitive Concept based on EEG Data Mining in Chinese English Translation Guiding** 
Chen Liang
Publication Year: 2021 , Page(s): 142 - 145
 - ▶ Abstract [HTML](#)  
- Application of Students' Cognitive Concept based on EEG Data Mining in Chinese English Translation Guiding** 
Chen Liang
2021 Second International Conference on Electronics and Sustainable Communication Systems (ICESC)
Year: 2021
- A Comprehensive Review on Deep Learning Algorithms and its Applications** 
P. Santhosh Kumar; V.P Sakthivel; Manda Raju; P.D. Sathya
Publication Year: 2021 , Page(s): 1378 - 1385
 - ▶ Abstract [HTML](#)  
- A Comprehensive Review on Deep Learning Algorithms and its Applications** 
P. Santhosh Kumar; V.P Sakthivel; Manda Raju; P.D. Sathya
2021 Second International Conference on Electronics and Sustainable Communication Systems (ICESC)
Year: 2021
- Mega Bot – The Healthcare Chatbot** 
Megarajan G
Publication Year: 2021 , Page(s): 1386 - 1395
 - ▶ Abstract [HTML](#)  
- Mega Bot – The Healthcare Chatbot** 
Megarajan G
2021 Second International Conference on Electronics and Sustainable Communication Systems (ICESC)
Year: 2021
- Use of Ensemble Machine Learning to Detect Depression in Social Media Posts** 
Nakshatra Jagtap; Hrushikesh Shukla; Vaibhavi Shinde; Sharmishta Desai; Vrushali Kulkarni
Publication Year: 2021 , Page(s): 1396 - 1400



All



ADVANCED SEARCH

Conferences > 2021 Second International Con...

Genetic Algorithm Implementation for Improved Change Detection on Remote Sensed Data

Publisher: IEEE

Cite This

PDF

Snehlata ; Neetu Mittal ; Alexander Gelbukh All Authors

19 Full Text Views



Alerts

- Manage Content
- Alerts
- Add to Citation
- Alerts

Show More

Abstract

Document Sections

- I. Introduction
- II. Proposed Methodology
- III. Result and Discussion
- IV. Conclusion

Authors

Figures

References

Keywords

Metrics

More Like This



Abstract: Edge detection is about identifying edges in an image. Edges identified in same spot images but captured at different time helps in understanding change detection. Findin... [View more](#)

Metadata

Abstract: Edge detection is about identifying edges in an image. Edges identified in same spot images but captured at different time helps in understanding change detection. Finding the most suitable technique for edge detection is a thought-provoking and time-consuming task. This paper presents an implementation of genetic algorithm on 5 satellite images for edge detection. The proposed technique has been assessed with sobel and canny traditional techniques with the help of entropy values, and it was noted that GA method outperforms the sobel and canny techniques and produces an output image with better clarity edges for change detection.

Published in: 2021 Second International Conference on Electronics and Sustainable Communication Systems (ICESC)

Date of Conference: 4-6 Aug. 2021 **INSPEC Accession Number:** 21137201

More Like This

A genetic algorithm approach to purify the classifier training labels for the analysis of remote sensing imagery
2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)
Published: 2017

Multispectral Remote Sensing Land Use Classification Based on RBF Neural Network with Parameters Optimized by Genetic Algorithm
2018 International Conference on Sensor Networks and Signal Processing (SNSP)
Published: 2018

IEEE

Publish Open Access with IEEE

- Maximize visibility via IEEE Xplore
- Rapid decisions
- Rigorous peer-review
- Mandate-compliant

IEEE Open Access options:

- IEEE Access[®] multidisciplinary journal
- 20+ Fully Open Access Topical Journals
- 160 Top-cited hybrid publications

Submit your paper today!

Contents

I. Introduction

In image processing, one of the first and the crucial step is image segmentation in which we try to segment an image by identifying the edges. The main goal is to extract useful and meaningful objects from an image. An edge is responsible for separating two regions, where these regions have distinct gray level properties. The satellite images with weak boundaries and varying intensities are highly complex to interpret and thus severely affects the decision accuracy regarding change detection in covered land areas. Thus, there is a necessity for a right and a proper edge detection segmentation-technique for change detection. Various image segmentation techniques are present in literature such as particle swarm optimization, cuckoo search and ant colony optimization. To find a best technique is still a challenging task. Pandey, B. N., & Rana, A. [1] performed a comprehensive review of nature inspired algorithms such as artificial bee colony algorithm, cuckoo search and many more in the field of image segmentation. Better results were obtained from modified artificial bee colony and variants of cuckoo search. Parihar, A. S. [2] considered differential evolution and type 2 fuzzy systems for image segmentation. Hammouche, K., Diaf, M., & Siarry, P. [3] presented a combined method on the basis of genetic algorithm along with wavelet transform for fast image segmentation. Bosco, G. L. [4] presented an usage of genetic algorithm in the line of work of image segmentation. Fitness function on the basis of similarity of images was defined. De, S., Bhattacharyya, S., & Singh, P. [5] presented genetic algorithm based algorithm for segmentation and compared the method with 2 standard methods. Yufeng, L., & Wei, H. [6] used hybrid genetic FCM and image registration for performing a research. Singh, A., & Singh, K. K. [7] implemented genetic algorithm along with radial basis function NN in the area of classification of satellite images. Naeini, A. A. et. al. [8] thrived in the area of feature selection based on object with the optimization based on particle swarm and compared the method with genetic algorithm, honey-bee mating and artificial bee colony. Genitha, C. H., & Vani, K. [9] used genetic algorithm and Hopfield NN for super resolution mapping. Muangkote, N., Sunat, K., & Chiewchanwattana, S. [10] implemented improved moth-flame optimization algorithm by considered image segmentation and also did comparison with 5 different algorithms. Pathak, S., & Sejwar, V. [11] presented the application of genetic algorithm for segmentation of noisy images. Chakraborty, R., Sushil, R., & Garg, M. L. [12] worked on multilevel segmentation of an image and presented an usage of improved particle swarm optimization based technique. Anand, J. V. [13] worked in the area of secure and sustainable software defined network. Pandian, & Smys [14] worked in the area of reducing the fragmentation by Cloud Enabled Back Up Storage. Shakya [15] presented a survey

considering architecture, challenges and applications of cloud robotics. Sivaganesan [16] implemented block chain for smart contract based preservation of industrial data.

Authors	▼
Figures	▼
References	▼
Keywords	▼
Metrics	▼

[CHANGE USERNAME/PASSWORD](#)

[PAYMENT OPTIONS](#)

[COMMUNICATIONS PREFERENCES](#)

[US & CANADA: +1 800 678 4333](#)



[VIEW PURCHASED DOCUMENTS](#)

[PROFESSION AND EDUCATION](#)

[WORLDWIDE: +1 732 981 0060](#)

[TECHNICAL INTERESTS](#)

[CONTACT & SUPPORT](#)

[About IEEE Xplore](#) [Contact Us](#) [Help](#) [Accessibility](#) [Terms of Use](#) [Nondiscrimination Policy](#) [IEEE Ethics Reporting](#) [Sitemap](#) [Privacy & Opting Out of Cookies](#)

IEEE Account

- » [Change Username/Password](#)
- » [Update Address](#)

Purchase Details

- » [Payment Options](#)
- » [Order History](#)
- » [View Purchased Documents](#)

Profile Information

- » [Communications Preferences](#)
- » [Profession and Education](#)
- » [Technical Interests](#)

Need Help?

- » [US & Canada: +1 800 678 4333](#)
- » [Worldwide: +1 732 981 0060](#)
- » [Contact & Support](#)

[About IEEE Xplore](#) [Contact Us](#) [Help](#) [Accessibility](#) [Terms of Use](#) [Nondiscrimination Policy](#) [Sitemap](#) [Privacy & Opting Out of Cookies](#)

A not-for-profit organization, IEEE is the world's largest technical professional organization dedicated to advancing the global state of technology.
© Copyright 2021 IEEE. All rights reserved. Use of this web site signifies your agreement to the IEEE Terms of Use.

A Complete Guide to
**Wireless
Sensor Networks**



Dr. Manish Gupta

Mr. Deepak Sharma

Ms. Neha Gupta

Dr. Naresh Kumar

A Complete Guide to Wireless Sensor Networks

Dr. Manish Gupta

Mr. Deepak Sharma

Ms. Neha Gupta

Dr. Naresh Kumar

ISBN: 9798885462341

© All Right Reserved by the Publisher.

First Edition: December 2021

NOTION PRESS

This book has been published with all reasonable efforts taken to make the material error-free after the consent of the author. No part of this book shall be used, reproduced in any manner whatsoever without written permission from the author, except in the case of brief quotations embodied in critical articles and reviews.

The Author of this book is solely responsible and liable for its content including but not limited to the views, representations, descriptions, statements, information, opinions and references. The Content of this book shall not constitute or be construed or deemed to reflect the opinion or expression of the Publisher or Editor. Neither the Publisher nor Editor endorse or approve the Content of this book or guarantee the reliability, accuracy or completeness of the Content published herein and do not make any representations or warranties of any kind, express or implied, including but not limited to the implied warranties of merchantability, fitness for a particular purpose. The Publisher and Editor shall not be liable whatsoever for any errors, omissions, whether such errors or omissions result from negligence, accident, or any other cause or claims for loss or damages of any kind, including without limitation, indirect or consequential loss or damage arising out of use, inability to use, or about the reliability, accuracy or sufficiency of the information contained in this book.

MRP ₹. 260 /-

ISBN: 9798885462341

Notion Press Media Pvt Ltd,
Old No. 38, New No. 6, McNichols Road, Chetpet,
Chennai-600031,
Tamilnadu, India.
Email: orders@notionpress.com

EDITORS PROFILE



Dr. Manish Gupta holds a Ph.D. degree from MNNIT, Allahabad and M.Tech. from YMCA University of Science and Technology, Faridabad. He is currently working as Associate Professor in Moradabad Institute of Technology, Moradabad affiliated to Dr. A.P.J. Abdul kalam Technical University, Lucknow. His area of research includes speech signal processing, image processing, machine learning, mobile ad hoc network and IOT. He is a member of CSI, ISTE and IFERP.



Mr. Deepak Sharma is currently working as an Assistant Professor in the Department of Information Technology and IQAC Coordinator in Jagannath International Management School, New Delhi. He obtained his M.Tech(CS) from Jagannath University, Jaipur and MCA from Maharshi Dayanand University Rohtak. He is also pursuing Ph.D. from Jagannath University, Jaipur. He is having more than 15 years of experience in academics and industry. His main interest areas include Programming & Data Structure, Software Engineering, Computer Graphics, Data Mining and Machine Learning. He is having many research publications, book chapters and one patent to his credit.



Ms. Neha Gupta holds M.Tech. degree from IFTM University Moradabad and B.Tech from CET affiliated to UPTU Lucknow. She is currently working as Assistant Professor in Moradabad Institute of Technology, Moradabad affiliated to Dr. A.P.J. Abdul kalam Technical University, Lucknow. Her area of research includes image processing, visual cryptography, machine learning and IOT. She is a member of CSI, ISTE and IFERP.



Dr. Naresh Kumar holds a Ph.D. from Kurukshetra University, Kurukshetra and M.Tech. (Computer Science and Engineering) degree from YMCA University of Science and Technology, Faridabad. He is currently working at Maharaja Surajmal Institute of Technology, New Delhi where he is working as an associate professor. His area of research interest includes web technologies, machine learning, block chain, cloud computing and IoT. He is a member of ISTE, IFERP and IAASSE.

CONTENTS

Chapter I

Network of Wireless Sensor Nodes

1.1	Definitions and Background	1
1.2	Challenges and Constraints	10
1.3	Structural Health Monitoring	14
1.4	Traffic Control	19
1.5	Health Care	29
1.6	Pipeline Monitoring	36
1.7	Precision Agriculture	40
1.8	Active Volcano	48
1.9	Underground Mining	53

Chapter II

Node Architecture

2.1.	The Sensing Subsystem	61
2.2	The Processor Subsystem	65
2.3	Communication Interfaces	75
2.4	Prototypes	84
2.5	Operating Systems	91

Chapter III

Physical Layer

3.1	Physical Layer	105
3.2	Source Encoding	109
3.3	Channel Encoding	113
3.4	Modulation	117
3.5	Signal Propagation	132

Chapter IV

Medium Access Control

4.1 Overview	135
4.2 Wireless MAC Protocols	140
4.3 Characteristics of MAC Protocols in Sensor Networks	150
4.4 Contention-Free MAC Protocols	157
4.5 Contention-Based MAC Protocols	166
4.6 Hybrid MAC Protocols	174

Chapter V

Node and Network Management

5.1 Local Power Management Aspects	182
5.2 Dynamic Power Management	186
5.3 Conceptual Architecture	195
5.4 Basics of Time Synchronization	201



Scopus

WEB OF SCIENCE

Indexed Publication

3rd International Conference on

Information Management & Machine Intelligence

(ICIMMI-2021)

Organized By



December 23-24, 2021

Certificate

This is to certify that paper entitled as "Optimization and Pursuance Analysis of RDBMS for Relational Algebraic Operations - My-SQL" was presented by Dr. Arpana Chaturvedi of *Jagannath International Management School Delhi* in the "3rd International Conference on Information Management & Machine Intelligence (ICIMMI-2021)" held during December 23-24, 2021 at Poornima Institute of Engineering & Technology, Jaipur, Rajasthan.

Dr. Anil Kumar
Organizing Chair, ICIMMI-2021

Mr. Deepak Moud
Conference Co-Chair, ICIMMI-2021

Dr. Dinish Goyal
Conference Chair, ICIMMI-2021



Poornima Institute of Engineering & Technology
ISI-2 RICO Institutional Area, Sitapura, Jaipur-302022 (Raj.), INDIA
Website: www.piet.poornima.org

Optimization and Pursuance Analysis of RDBMS for Relational Algebraic Operations - My-SQL.

Abstract

A researcher can find problems and their solutions on any website and its Database, so that database can be utilized appropriately and anyone can apply tools on the data for query optimization and query processing. For optimization Relational Database Management Systems (RDBMS) trust an optimizer that converts SQL statements into executable code. If indexes are removed, the RDBMS can still access the data (less efficiently). If a column is added to the table being accessed, the data can still be manipulated without changing the program code. This is all possible because the physical access paths to the data are generated by the relational optimizer. Problems in optimizing MY-SQL DB are: Huge Database, Least Usage of Index, the problem with MVD, wrong Schema, Unnecessary columns, Apply integrity constraints, Response time and time of Query Processing. These problems are related to relational databases. In this paper, we focus on performance tuning, time utilization or response time, a technique used for query execution and memory usage. To solve these problems we need to create three-tier architecture which includes front-end, back-end, and business logic. This paper includes relational DB as MY-SQL in which we check pursuance analysis of employee database, we check the usage of the index, the definition of schema, multivalued dependency, provide consistency and response time or reaction time. For validating and provide a user-friendly environment through front end application in HTML and verification through PHP. We need to perform selection, projection and join operation in a query. To complete this paper we use MY_SQL, HTML, and PHP. To do assessment we use profiling and checking the status of each query, time required to respond. MY-SQL uses SHOW STATUS and SHOW PROFILE solves basic problems in RDBMS i.e. MY-SQL.

Keywords: Relational Databases, DBMS, Performance Evaluation, Oracle, My-SQL and Microsoft Access.

1. Introduction

Web-based application or internet is required in our day-to-day life so we need to check application performance optimization in any web-based applications. It's very important to normalized DB so that it is used on the records (DB and website) according to requirements. Research paper always prepares according to research society's needs and requirements and its goal. We need to think about research analysis and data we selected for work. For the website, we always select a simple database of research applications. Perfect definition can't be explained for analysis but we can specify requirements of DB and its specifications. To make web-based applications more interactive and user-friendly we need DB will be properly being normalized

and useful for future forecasting and optimized any DB. For the selection of data we need to concentrate a few facts they are:

Data Selection based on facts and figure, it all depends on the DB we selected and how we analyze.

Web-based application, we should keep in mind that DB should be simple, normalized and optimized.

Type of query performed; there are varieties of styles in which each query can be performed. A researcher needs to understand which parameters he/she selects.

Quality Factors, for any research analysis quality is an important factor that includes correctness, consistency, accuracy, robustness, user-friendly, user interface, verification and validation and reusable.

For Perfect DB we need to understand research analysis for better performs selection and designing of data should be kept in mind.

2. The Objective of Research work

To understand the basic need of tuning any DB, i.e., to check the performance of any DB, we require RDBMS DB so that we can find applications, for instance, SQL statement tuning. The next step is how CPU can be utilized properly with perfect response time and better memory usage. The second objective of our research work is to define the cost of any query for that we need to measure proper parameters like time required by each query and memory usage.

3. Problems facing in Tuning My-SQL DB and its Solution's

We create DB named as research_work in MY-SQL which consists of employee records of ABC Corp. These employee records are dummy record, department table which includes the entire department and its description. For evaluating the query based on part of and prefer in MYSQL (DB) because it's open-source and platform-independent. We can create the analysis so that to find out how much response time perform by the server if we create any query and how good or bad MY-SQL performs as a backend. Various problems encounter are given below:

- Huge Database.
- Least usage of Index
- Avoid using a wildcard (*) character
- Avoid using MVD
- Redefine Schema
- Avoid unnecessary Column
- Remove Duplicate Column

- Write more Precise query
- Reaction Time

To resolve the query, we need to perform technical tools and operations, they are given below in the Proposed Work.

4 Proposed Work

In Any relational DB, we need to perform performance monitoring and data synchronization so DB needs to be tuned and popular tools are in use to provide optimized data. There is a variety of DB available like Relational DB, Object DB, Hierarchical database, Network DB, Object-oriented DB in our case we select relational DB because we need to join two queries, perform normalization (3NF) and find the results according to that. In the market various DB's are available like oracle, Sybase, MY-SQL, SQL Server, IBM DB2 but we select open-source DB because it's easily available and more suitable and requires less memory space and better user-friendly so we select MY-SQL using XAMPP. Various advantages platform-independent, great storage, allow the query to perform all operations, perform cardinality, multiple operations with multiple users. There are some disadvantage of using paid software is that it required programming skills, require good design tools. MY-SQL is the best solution for selected as a back-end and we select PHP and HTML as a front-end tool.

4.1 Tools and Techniques

For research work, we require tools and techniques to fulfill the analysis and tuning of DB. We required various software and Internet facility. The hardware and software program necessities for my thesis presented are

Hardware Requirements:

- Processor: P3
- RAM: 4 GB or Higher
- Hard Disk: 320 GB or Higher

Software Requirements:

- Platform: Windows 10 pro
- MYSQL 10.1
- PHP

4.2 Scope of work

This study is based on the basis of the dummy database i.e., research_work, The research_work of employee record for employee record and we find out the performance monitoring of different records. The employee schema includes various attributes they are employee_id, name, and address. The research_work DB is a small database which consists of employee and its department. For the analysis purpose queries are primarily based on wild card characters and

+ Options

Field	Type	Null	Key	Default	Extra
id	int(5)	NO		NULL	
name	varchar(230)	YES		NULL	
address	varchar(224)	YES		NULL	

Fig 1.1: Employee Table

with or without Multi value Dependency, we perform all practical work in MY-SQL as a back-end and PHP as a front-end. I execute the query to find out how optimized queries and improve overall performance analysis of the frontend and backend. The various queries can be performed to calculate how performance can be monitor and tuning of MY-SQL queries. I analyze query performance with or without performance monitoring techniques and reaction or response time for each query.

4.3 Solutions for optimization of MY-SQL DB

There are various problems related with any DB but it is important to resolve problems and use optimization technique through which DB can be tuned and summarized easily. Each DB has different problems these problems are related memory allocation, response time and processing speed. DB may be freeware or paid. Space required to install any DB may be vary. MySQL is freely available

4.3.1 Huge DB

It is necessary for every DB to decompose and recombine to check working of any DB. It is important that if DB is decompose and recombine and provide lossless data. Above Fig1.1 show employee registration but when we divide data or table into sub parts then we get decompose data i.e. in the form of e1 and e2 table shown in Fig1.2 and Fig 1.3 respectively.

Your SQL query has been executed successfully.

```
desc e1
```

+ Options

Field	Type	Null	Key	Default	Extra
id	int(5)	NO		NULL	
name	varchar(230)	YES		NULL	

Fig 1.2 e1 Table

Your SQL query has been executed successfully.

```
desc e2
```

+ Options

Field	Type	Null	Key	Default	Extra
id	int(5)	NO		NULL	
address	varchar(224)	YES		NULL	

Fig1.3 e2 Table

When we want to perform any query in employee table where we have 100 records then time required by each query is huge and same query we need to perform in e1 or e2 table then its less, shown in Fig1.4 and Fig 1.5 Respectively.

✓ Showing rows 0 - 4 (5 total, Query took 0.1121 seconds.)

```
SELECT * FROM employee WHERE name like 's%'
```

Show all | Number of rows: 25 | Filter rows:

+ Options

id	name	address
11	sdwsd	rh
15	sdwsd	rh
21	sdwsd	rh
22	sdwsd	rh
101	shdshd	gsgds

Fig 1.4 Fetch record from Employee Table

✓ Showing rows 0 - 4 (5 total, Query took 0.0023 seconds.)

```
select * from e1 where name like 's%'
```

Show all | Number of rows: 25 | Filter rows

+ Options

id	name
11	sdwsd
15	sdwsd
21	sdwsd
22	sdwsd
101	shdshd

Fig 1.5 Fetch records from e1 Table

Above diagram show time required to response in Fig1.4 shows 0.1121 seconds and Fig1.5 shows 0.0023 seconds when we find all the records of employee whose name start with s. And we do same with e1 table and find the time required by each query to perform

4.3.2 Least Usage of Index

Basic purpose of using indexing are that it save time, speed up for selection and find large string but in case of DML operations it slow as we can see in MY-SQL if we set index on e1 table on name field then time required to response is lesser.

```
✓ Showing rows 0 - 4 (5 total, Query took 0.0019 seconds.)  
SELECT * FROM `e1` WHERE name like 's%'
```

Fig 1.6 With Indexing on e1 table

Earlier it was 0.0023 seconds and after indexing it is 0.0019 seconds. But when we add index it required less time.

```
✓ Showing rows 0 - 4 (5 total, Query took 0.0023 seconds.)  
select * from e1 where name like 's%'
```

Fig 1.7 Without Indexing on e1 table

4.3.3 Avoid Wild(*) Card Character

When we are using SQL statement its required that we need to avoid using wild card character such as like with *, %, _.

```
✓ Showing rows 0 - 4 (5 total, Query took 0.0019 seconds.)  
SELECT * FROM `e1` WHERE name like 's%'
```

Fig. 1.8 With wildcard character

```
✓ Showing rows 0 - 4 (5 total, Query took 0.0015 seconds.)  
SELECT id, name FROM `e1` WHERE name like 's%'
```

Fig. 1.9 Without wildcard character

As shown in Fig 1.8 and Fig 1.9 when we use wild card character (*) memory usage is high then other i.e. 0.0015 second and 0.0019 Seconds respectively.

4.3.4 Don't use or avoid MVD

Best part of MYSQL DB is that it doesn't allow DBA to create multivalued object. If we want to create we can create using manual method.

✓ Showing rows 0 - 20 (21 total, Query took 0.0019 seconds.)

```
SELECT * FROM `emp` WHERE id between 20 and 40
```

Fig1.10 Without Multiple value

✓ Showing rows 0 - 20 (21 total, Query took 0.0020 seconds.)

```
SELECT * FROM `emp1` WHERE id between 20 and 40
```

Fig 1.11 With Multiple value

As shown in the Fig 1.10 and Fig 1.11 we analyze that when we use multiple values we get more value or more time to process.

4.3.5 Redefine your schema

It is required that you must analyze the column first then you select schema. In MYSQL information_schema.schemata will check and refine schema created by the system.

✓ Showing rows 0 - 13 (14 total, Query took 0.0022 seconds.)

```
SELECT * FROM INFORMATION_SCHEMA.SCHEMATA
```

Fig 1.12 MySQL Schema which call object

It contains memory stored in MySQL schema. It includes all the schema; we create schema for individual DB.

✓ Showing rows 0 - 0 (1 total, Query took 0.0020 seconds.)

```
SELECT * FROM information_schema.schemata where SCHEMA_NAME='research_work'
```

Fig 1.13 Schema of research_work DB.

When we collect information from entire schema or individual schema result would be different.

4.3.6 Avoid unnecessary columns

It is necessary to delete unnecessary column from the tuple and we get appropriate record and find the query very quickly.

✓ Showing rows 0 - 2 (3 total, Query took 0.0021 seconds.)

```
SELECT * from emp1_1
```

Fig 1.14 Query of emp1_1.

```

✓ Showing rows 0 - 2 (3 total, Query took 0.0018 seconds.)
SELECT * FROM emp1_1_1

```

Fig 1.15 Query of emp1_1_1.

In case of emp1_1 table where fields or attributes are id, fname, mname and lname, where as in case emp1_1_1 table attribute are id, fname and lname. When we perform query 'select * from <table-name>' response time for both of the queries are different as 0.0021 and 0.0018 second respectively.

4.3.7 Remove duplicate columns

```

✓ Showing rows 0 - 2 (3 total, Query took 0.0021 seconds.)
SELECT * from emp1_1

```

Fig 1.16 emp1_1 .

```

✓ Showing rows 0 - 2 (3 total, Query took 0.0018 seconds.)
SELECT * FROM emp1_1_1

```

Fig 1.16 Query of emp1_1_1.

In case of emp1_1 table where fields or attributes are id, fname, mname and lname, where as in case emp1_1_1 table attributes are id, fname and lname. When we perform query 'select * from <table-name>' response time for both of the queries are different as 0.0021 and 0.0018 second respectively.

4.3.8 Write More Precise Query

Whenever we are writing any query we need to write query according to requirements and specifications. It includes never use (*), avoid subquery, work on response time, as given below:

4.3.8.1 Never use(*)

```
SELECT * FROM `emp1_1_1` WHERE 1
```

Showing rows 0 - 2 (3 total, Query took 0.0059 seconds.)

```
SELECT * FROM `emp1_1_1` WHERE 1
```

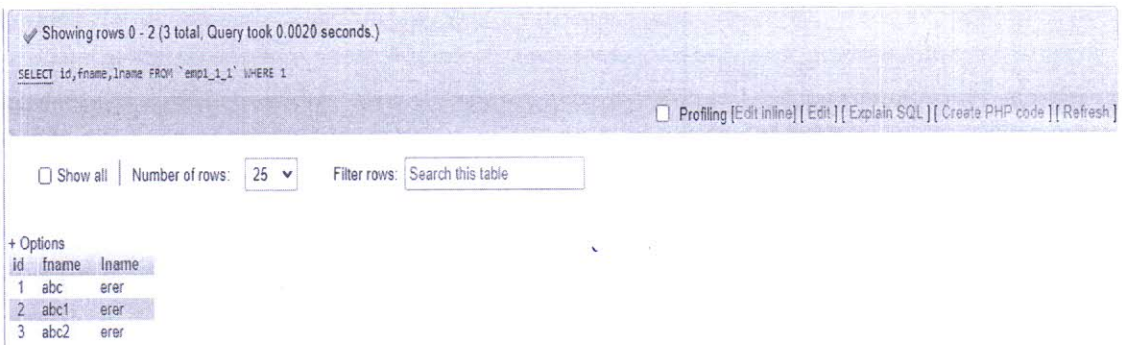
Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 | Filter rows: Search this table

id	fname	lname
1	abc	erer
2	abc1	erer
3	abc2	erer

Fig 1.16: Before using all fields record in employee

SELECT id, fname, lname FROM `emp1_1_1` WHERE 1



Showing rows 0 - 2 (3 total, Query took 0.0020 seconds.)

```
SELECT id, fname, lname FROM `emp1_1_1` WHERE 1
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 | Filter rows: Search this table

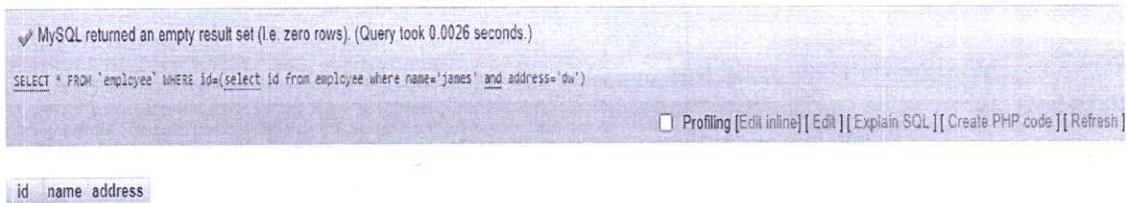
+ Options

id	fname	lname
1	abc	erer
2	abc1	erer
3	abc2	erer

Fig 1.17: After using all fields record in employee

4.3.8.2 Avoid subquery

SELECT * FROM `employee` WHERE id = (select id from employee where name='james' and address='dw')



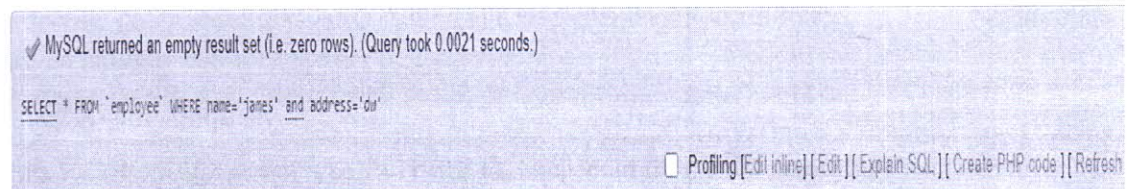
MySQL returned an empty result set (i.e. zero rows). (Query took 0.0026 seconds.)

```
SELECT * FROM `employee` WHERE id=(select id from employee where name='james' and address='dw')
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

id	name	address
----	------	---------

Fig 1.18: Adding subquery



MySQL returned an empty result set (i.e. zero rows). (Query took 0.0021 seconds.)

```
SELECT * FROM `employee` WHERE name='james' and address='dw'
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Fig1.19: Avoiding Subquery when we are writing any query

4.3.9 Reaction or response times.

We need to set timings of profile as 1. By default value of profiling is 15 and maximum it is 100, it shows the usage of resources.

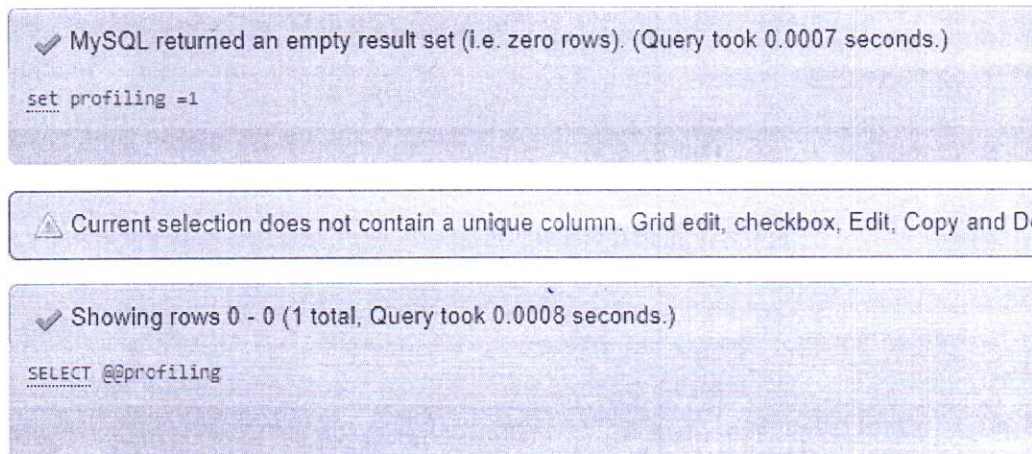


Fig 1.20: Set Profiling as 1

5. Future Work:

In future work, we implement more efficient and effective techniques to perform performance tuning by optimizing SQL queries. Few points which we will take care of is to not execute queries in loops as it slows down the complete sequence of a code, to use temp table in case of processing large volume of databases as it helps in reducing computing power, in spite of using linked queries suggested to use Join to optimize time by reducing average cycle speed, to use Where Clause in place of Having clause as it is much quicker and faster to execute queries, to filter maximum data set at the server end as the less data retrieved, the faster the query will run, hence its better to limit the working data set size. It is also suggested to use Exists in place of count to find out existence of records as it is more effective and efficient. In case of large scaled database and while doing indexing, use clustered and non-clustered indexes to reduce the execution time and to manage memory space. A clustered index requires no additional space whereas non-clustered required additional disk space. It is also proposed to avoid use of Distinct in Select query. It is better to use select fields in place of select *. To define the optimal requirements before starting any query so that fetching the records from the database consumes less time.

6. Conclusion

Queries are to be executed in such a way that while working with large-scaled databases, it should take optimal time and, in a situation, when a small change has been made in the database, the preformation should not get effected drastically. The queries should be able to handle such situations.

We have created a 3-tier architecture in this paper to optimize SQL Queries. We have used various optimization techniques and performed performance analysis. During performance analysis, various aspects which are checked the query processing time after every query along with its response time. It has been concluded that after applying various optimization and query processing tools, SQL statements are converted into executable code. The efficiency and performance are increased by removing indexes are removed, after adding a column in the table, it has been checked that yet it is accessible and data can be manipulated efficiently without

changing the program code. Various assessments are done using Show Profile and Show Status to check the status of each and every query along with its execution and response time. We have also tried to perform optimized queries so that the memory utilization can be saved. We have also checked the multi valued dependencies. These all processing are done using MY_SQL, HTML, and PHP.

In the future work all mentioned tools and techniques will help in optimizing SQL queries and in performance tuning.

7. Acknowledgement: This research was supported by various research work done by researchers and published papers. I thank all of them as their research work has provided the insight and expertise to me and their work has greatly assisted my research. I would like to thank to reviewers for their comments on an earlier version of the paper, who guided me and made me realized about my mistakes. I would like to thank and show my gratitude to my colleagues for sharing their pearls of wisdom with me during the course writing this research paper Last but not the least, we would like to thank our family members, who cooperated with me in writing the research paper.

References

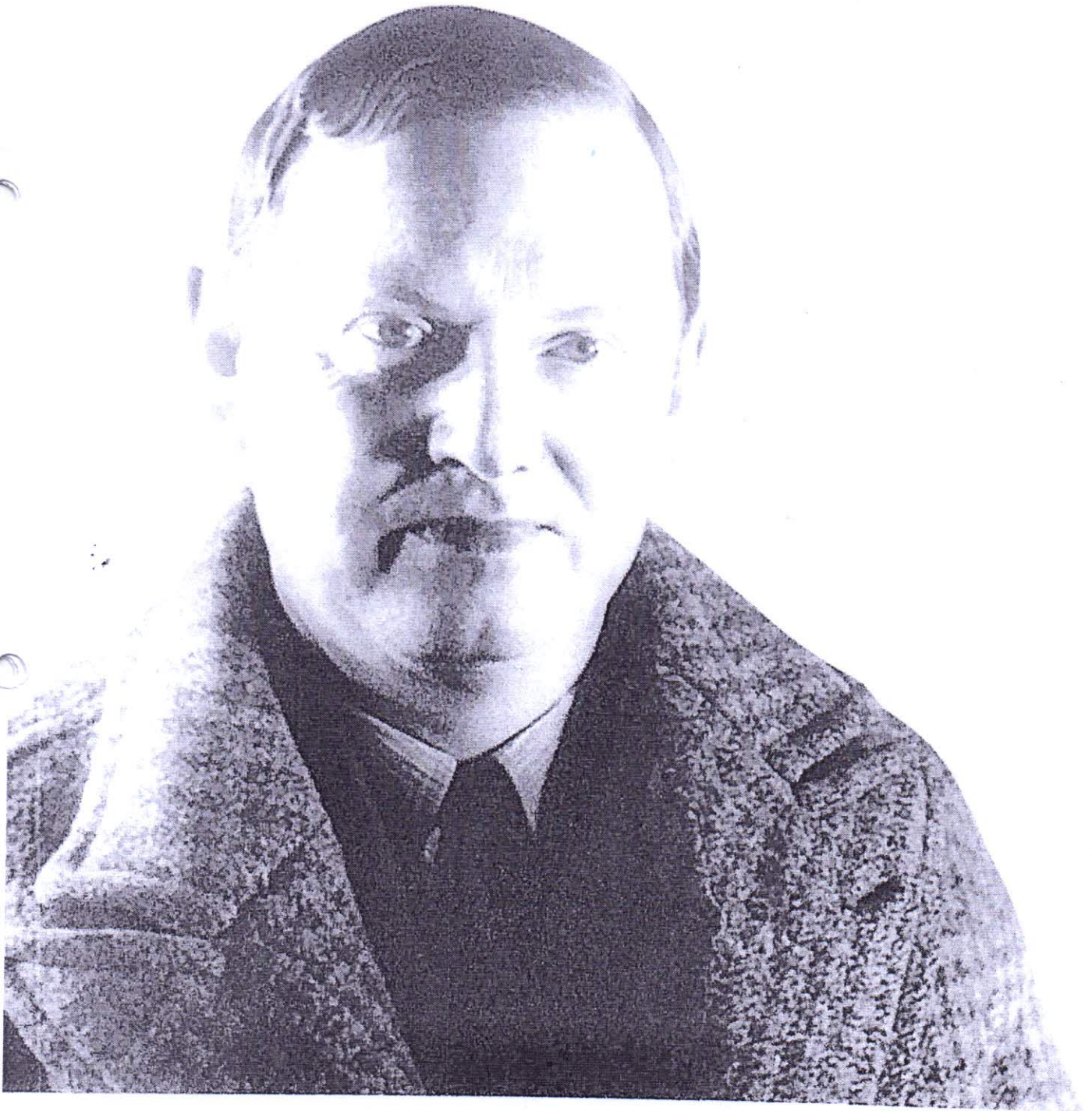
- [1] PL/SQL User's Guide and Reference Release 1 (10.1), <http://www.stanford.edu/dept/itss/docs/oracle/10g/appdev.101/b10807/toc.htm>
- [2] Dan Tow. SQL Tuning. O'Reilly Media. November 2003.
- [3] Cary Millsap, Jeff Holt. Optimizing Oracle Performance. Sept. 16, 2003.
- [4] Liu Liping. How to Improve the Inquirement & Statistics Speed of MySQL ZCOM,2005
- [5] Ed Pollack, <https://www.sqlshack.com/query-optimization-techniques-in-sql-server-the-basics/>,2018
- [6] Swati Jain and Paras Nath Barwal," Performance Analysis of Optimization Techniques for SQL Multi Query Expressions Over Text Databases in RDBMS", International Journal of Information & Computation Technology. ISSN 0974-2239 Volume 4, Number 8 (2014), pp. 841-852 © International Research Publications House <http://www.irphouse.com>
- [7] <https://www.apriorit.com/dev-blog/381-sql-query-optimization>, " How to Optimize SQL Queries: Helpful Tips and Techniques ",2021
- [8] Matt Watson, <https://stackify.com/performance-tuning-in-sql-server-find-slow-queries/>, SEPTEMBER 6, 2019
- [9] Artem Yevtushenko ,<https://www.sisense.com/blog/8-ways-fine-tune-sql-queries-production-databases/>, April 24, 2019
- [10] Staff Contributor, <https://www.dnsstuff.com/sql-server-query-optimization>, Jan 30,2020.
- [11] Luqman Hakim, Suryanto Nugroho, Sigit Hadi Waluyo ,https://www.researchgate.net/publication/318502673_Experiment_of_Query_Optimization_Techniques_to_get_the_Efficie

nt_Query, July 2017,International Journal of Computer Applications 170(10):6-10,DOI: 10.5120/ijca2017914888

[12] Jyoti Mor, Indu Kashyap, R. K. Rathy, https://www.researchgate.net/publication/258651725_Analysis_of_Query_Optimization_Techniques_in_Databases,June 2012,International Journal of Computer Applications 47(15):6-12,DOI:10.5120/7262-0127

EVELYN WAUGH REVISITED

an exploration of his
comic vision & art



RAVI K DHAR

Think Tank
Books

Evelyn Waugh Revisited

An Exploration of His Comic Vision and Art

Ravi K Dhar


Think Tank
Books

Title: Evelyn Waugh Revisited
Author: Ravi K Dhar
Published by: Think Tank Books in 2022
Address: RZ-26/27B, Ashok Park, West Sagarpur, New Delhi - 110046
Website: thinktankbooks.com
Email: editorial@thinktankbooks.com

Ravi K Dhar asserts the moral right to be identified as the author of this book.
Copyright © 2022 by Ravi K Dhar

Image of The Mother by Henri Cartier Bresson
<https://artcritique.files.wordpress.com/2013/07/divine-mother.jpg>, Public Domain,
<https://commons.wikimedia.org/w/index.php?curid=44956597>

Cover image of Evelyn Waugh by Carl Van Vechten (1880–1964) - This image is available from the United States Library of Congress's Prints and Photographs division under the digital ID cph.3a42832. This tag does not indicate the copyright status of the attached work. A normal copyright tag is still required. See Commons:Licensing for more information., Public Domain, <https://commons.wikimedia.org/w/index.php?curid=43620>

All rights reserved.

ISBN: 978-81-947561-6-3

Price: INR 499/-

Retail price listed is only for the Indian subcontinent.

Selling price may vary elsewhere.

5 4 3 2 1

Contents

Dedication	iii
Foreword	v
Acknowledgements	vii
1. Introduction	11
2. The Lesser Comedies	36
a. Decline and Fall	37
b. Vile Bodies	58
c. Black Mischief	78
d. Handful of Dust	97
e. Scoop	114
f. Put Out More Flags	132
g. The Loved One	148
h. The Ordeal of Gilbert Pinfold	160
3. The Greater Comedies	187
a. Brideshead Revisited	188
b. Helena	214
c. The Sword of Honour Trilogy	233
4. Conclusion	264
About the Author	278