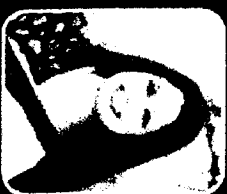


## About the Editor



Prof.(Dr.) Baldev Singh is M.Tech. & Ph.D. in Computer Science. At present he is working as a Dean, Faculty of Engineering & Technology, Vivekananda Global University, Jaipur and having 34+ years of experience in teaching, research & administration. His interest area is Artificial Intelligence & Cloud Technology. He has 40+ publications in National & International Journals. He is passionate for his work & having a deep understanding on his subject.



Dr. Ruchi Sharma to work hard and efficiently in order to undertake and achieve excellence in the assigned tasks". A result oriented professional with 15+ years of experience in Corporate and Academics to display exceptional communication, teaching, interpersonal and leadership abilities. Presently working as Professor in ECCE Dept. in Vivekananda Global University in Jaipur. Dedicated, enthusiastic individual with outstanding academic, communication, organizational, and people skills and a passion of networking. Believe in teamwork, collaboration and making right decisions at right time to get results.

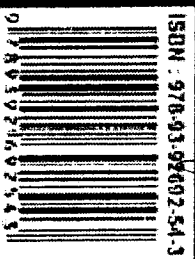
She is B.E., M.Tech., M.Phil Electronics & Communication Engineering and MBA in HR. Her interest area is Power systems, VLSI & Embedded Systems. She has 20+ publication in various national & International journals which make her more confident to enhance her outreach in Industry for students teaching with hands on practice.

## SAHITYAGAR

Dharami Market Street  
Chaura Kasta, Jaipur (Raj.) - 302003

☎ 0141-2310785, 4022302, 2322382

Available on :  Amazon.in,  Flipkart.com



₹ 750/-

Recent Advancement  
in Engineering Research and Application

Recent  
Advancement  
in Engineering  
Research and  
Application

Dr. Baldev Singh  
Dr. Ruchi Sharma

## Recent Advancement in Engineering Research and Application

Editors

**Dr. Baldev Singh**

**Dr. Ruchi Sharma**

### SAHITYAGAR

Dhamani Market Street,  
Chaura Rasta, Jaipur-302003  
e-mail : [sahityagar@gmail.com](mailto:sahityagar@gmail.com)  
website : [sahityagar.com](http://sahityagar.com)  
webmail : [mail@sahityagar.com](mailto:mail@sahityagar.com)

Available on :  [amazon.in](http://amazon.in),  [flipkart.Com](http://flipkart.Com)

Copyright © Reserved

ISBN : 978-93-92692-54-3

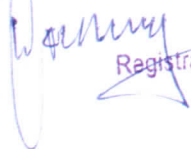
Price : 750/-

First Edition : 2021

Lazer Type Setting : Sahityagar Computers

Printer : SheetalPrinter

For Vivekananda Global University, Jaipur

  
Registrar

239

## Content

Sr.No.	Chapter Title	Author Name	P.No.
1.	Role of Cloud Computing and Implementation Challenges in Higher Education in Oman	<b>Anjum Zameer Bhat Baldev Singh</b> Department of Computer Engineering, Vivekananda Global University, Jaipur	1-9
2.	Critical Review of FIDIC Contract and Model Concession Agreement for Highway Development Projects in India	<b>Atahar Parvez Bashir Ahmed Daulatabadi M. Raisinghani &amp; Ravi Kant Pareek</b> Department of Civil Engineering, Vivekananda Global University, Jaipur	10-15
3.	Evaluation of Femtocell: Future Solution for Reliable Indoor Cellular Communication	<b>Kausar Ali Y. C. Sharma</b> Vivekananda Global University, Jaipur	16-30
4.	Strength of Sand Mixed with Randomly Distributed Jute Fibers	<b>Kuldeep Singh Kulhar M. Raisinghani</b> Department of Civil Engineering, Vivekananda Global University, Jaipur	31-37
5.	Use of Interactive Multimedia Authoring Framework in Education Technology	<b>Vikas Rao Naidu Baldev Singh</b> Department of Computer Engineering, Vivekananda Global University, Jaipur	38-42
6.	Performance Optimization of VCR-DI Diesel Engine Fuelled with Cotton Seed Oil Methyl Ester-Diesel Blend (B20) With Butanol as an Additive	<b>Hari Vishnu Khatri and Satendra Singh</b> Department of Mechanical Engineering, Vivekananda Global University, Jaipur	43-52
7.	Experimental Investigation of Response Parameters in Cylindrical Grinding of EN24 Steel by Using Taguchi Method and Grey Relational Analysis	<b>Raushani Suman and Gourav Nama</b> Department of Mechanical Engineering, Vivekananda Global University, Jaipur	53-65
8.	Performance Optimization of Diethyl Ether Additive for VCR Engine Fuelled with Cottonseed Oil Methyl Ester-Diesel Blend at Different Compression Ratios	<b>Owais Ahmad Malik and Satendra Singh</b> Department of Mechanical Engineering, Vivekananda Global University, Jaipur	66-75
9.	Experimental Investigation of Response Parameters in Cylindrical Grinding of EN8 Steel By Using Taguchi Method	<b>Krishna Nandan and Pramod Kumar</b> Department of Mechanical Engineering, Vivekananda Global University, Jaipur	76-88

For Vivekananda Global University, Jaipur

*[Signature]*  
Registrar

(240)

## Chapter-4

# Strength of Sand Mixed with Randomly Distributed Jute Fibers

Kuldeep Singh Kulhar and M. Raisinghani

Department of Civil Engineering, Vivekananda Global University, Jaipur

### General

The action of roots in nature demonstrates the basic principles of soil reinforcement. So, the concept of fibre reinforcement is analogous to the reinforcement of soils with plant roots. The fiber reinforcement idea has become important for use in engineering construction activities following the root reinforcements. The effect of root reinforcement on the shearing resistance and the slope-stability of slopes in nature have been reported by several investigators. The clay bricks reinforced with reeds or straw have been used in the 5<sup>th</sup> and 4<sup>th</sup> centuries BC. Ziggurat of Agar-Quf (Baghadad) is the earliest examples of soil composite. Plant or grass reinforced clay bricks were used for construction of the Agar-quf Ziggurat, while the Great Wall of China was made from mixtures of tamarisk branches, though the mechanism was not clearly enunciated.

In the 1960s, Vidal introduced the present concept of reinforcing the soil for composite material by introducing horizontal flat metal strips in granular soil as reinforcement. The soil reinforcement surface friction develops interaction between the reinforcement and the soil particles, he added. Resultant interaction transmits the tensile stresses in soil mass to the reinforcement. He described the composite as 'reinforced earth'. Thus, reinforced earth is a composite material, a combination of soil and reinforcement duly placed to bear the tensile stresses developed and also to improve the resistance of soil in the direction of maximum stress.

The reinforcement varies as per:

- (i) Pattern: fibers, bars, grids, sheets or strips
- (ii) Surface quality: smooth or rough
- (iii) Rigidity: low or high (fabrics has low rigidity while metal has high rigidity)

McGown pointed out the distinction between high modulus and low modulus reinforcements and classified the reinforcements into two major categories:

- (a) Ideally inextensible inclusions (i.e. metal strips and bars) and
- (b) Ideally extensible inclusions (i.e. natural and synthetic fibres, plant roots, and polymeric fabrics).

For Vivekananda Global University, Jaipur

Registrar