

# **Algorithms for Intelligent Systems**

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Jagdish Chand Bansal, Department of Mathematics, South Asian University,  
New Delhi, Delhi, India

Kusum Deep, Department of Mathematics, Indian Institute of Technology Roorkee,  
Roorkee, Uttarakhand, India

Atulya K. Nagar, School of Mathematics, Computer Science and Engineering,  
Liverpool Hope University, Liverpool, UK

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Xiao-Zhi Gao · Rajesh Kumar · Sumit Srivastava ·  
Bhanu Pratap Soni  
Editors

# Applications of Artificial Intelligence in Engineering

Proceedings of First Global Conference on  
Artificial Intelligence and Applications  
(GCAIA 2020)

*Editors*

Xiao-Zhi Gao   
School of Computing  
University of Eastern Finland  
Kuopio, Finland

Rajesh Kumar  
Department of Electrical Engineering  
Malaviya National Institute of Technology  
Jaipur, Rajasthan, India

Sumit Srivastava  
Department of Information Technology  
Manipal University Jaipur  
Jaipur, Rajasthan, India

Bhanu Pratap Soni  
Department of Electrical Engineering  
University of Engineering and Management  
Jaipur, Rajasthan, India

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# Preface

This 1st Global Conference on Artificial Intelligence and Applications (GCAIA 2020) was expected to be held in city of royals, Jaipur, but due to this pandemic situation of COVID-19 we have conducted this conference in a virtual mode. A visionary educationalist Prof. Dr. Satyajit Chakrabarti established the University of Engineering and Management, Jaipur, in 2011. He is presently the chancellor of the University of Engineering and Management, Jaipur. This university has Lush Green Campus of 32 acres situated in Sikar Road (NH-11), Udaipuria Mod, Jaipur 303807, Rajasthan. University of Engineering and Management, Jaipur, is one of the leading educational institutes in Rajasthan under the umbrella of Institute of Engineering and Management (IEM), Kolkata, West Bengal. Global Conference on Artificial Intelligence and Applications (GCAIA 2020) gives a premier forum to the researcher, engineers, corporates and scholar students for sharing their ideas of research in the field of artificial intelligence. The platform of GCAIA actually mitigates the gaps between academia, industry and governmental ethics, and the academic researchers would expose results and findings of laboratory-based experiments. The platform of GCAIA will also bring regional and international concerns for the discussions of recent advances in modern computation intelligence.

A tremendous amount of efforts was made by the reviewers to improve the quality of the research paper by making constructive and critical comments. The authors have implemented the modifications as suggested by the reviewers of this conference. For this aspect, author's efforts are really been appreciated. We are very much grateful to the session chairs, national and international committee members, student volunteers, administrative assistant and of course our faculty members for making this conference a grand success. We also thank the authors from different parts of the world for their good quality research paper submission for this conference. In this conference, a total of 336 research papers were submitted, and out of 336 papers 75 papers were

accepted and presented. It was the quality of their presentation and their passion for research in the field of artificial intelligence which makes this conference a grand success.

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Jaipur, India

Jaipur, India

Dr. Xiao-Zhi Gao

Prof. Dr. Rajesh Kumar

Prof. Dr. Sumit Srivastava

Prof. Bhanu Pratap Soni

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## About the Editors

**Xiao-Zhi Gao** received his B.Sc. and M.Sc. degrees from the Harbin Institute of Technology, China, in 1993 and 1996, respectively. He obtained his D.Sc. (Tech.) degree from the Helsinki University of Technology (now Aalto University), Finland, in 1999. He has been working as Professor at the University of Eastern Finland, Finland, since 2018. He is also Guest Professor at the Harbin Institute of Technology, Beijing Normal University and Shanghai Maritime University, China. Prof. Gao has published more than 400 technical papers in refereed journals and international conferences. His current Google Scholar H-index is 30. His research interests are nature-inspired computing methods with their applications in optimization, data mining, machine learning, control, signal processing and industrial electronics.

**Dr. Rajesh Kumar** received his B.Tech. degree from NIT Kurukshetra, India, the M. Tech. degree in Power System and the Ph.D. degree in Intelligent Systems MNIT, Jaipur. He was Postdoctorate Research Fellow in the Department of Electrical and Computer Engineering at the National University of Singapore (NUS), Singapore, from 2009 to 2011. Currently, he has been working as Professor with the Department of Electrical Engineering, MNIT, Jaipur. Dr. Kumar research interests focus on intelligent systems, machine intelligence, power management, smart grid and robotics. Dr. Kumar has published over 450 research articles, has supervised 20 Ph.D. and more than 30 M.Tech. thesis. He has 12 patents to his name. He received 03 academic awards, 12 best paper awards, 06 best thesis awards, 04 professional awards and 25 student awards. He has received the Career Award for Young Teachers in 2002 from the Government of India. He is on 12 Journal Editorial Boards. He is Associate Editor of IEEE Access, IEEE ITeN (Industrial Electronics technology News), Associate Editor, Swarm and Evolutionary Computation, Elsevier, Associate Editor, IET Renewable and Power Generation, Associate Editor, IET Power Electronics, Associate Editor, International Journal of Bio Inspired Computing, and Deputy Editor-in-Chief, CAAI Transactions on Intelligence Technology, IET. Dr. Kumar is Senior Member of IEEE (USA), Fellow of IET (UK), Fellow of IE (INDIA), Fellow of IETE, Life Member of CSI, Senior Member of IEANG and Life Member of ISTE. He was Honorary Secretary of IETE Rajasthan Chapter and Excom IEEE Delhi PES-IAS. Currently, he is Vice Chairman of IEEE Rajasthan Subsection.

**Sumit Srivastava** is currently Professor in the Department of Information Technology, Manipal University Jaipur (MUJ). He was holding the post of Head of the Department of Information Technology and recently promoted to Controller of Examination at MUJ. He has done his MCA from BITS, Mesra, Ranchi, and Ph.D. in Data Mining from the University of Rajasthan. He has 17 years of Teaching and nearly 12 years of Research Experience. Dr. Sumit has also been an invited speaker in the area of algorithms, machine learning, and information & knowledge discovery at various short-term courses. He has published around 85+ research papers in SCI, Scopus & peer-reviewed journals and conferences of international repute. He is currently Senior Member of IEEE, CSI & ACM and has been associated with various scientific societies as Member. He is also serving as Editorial Member in Springer Journal of Image Processing & Computer Vision, Guest Editor in Wiley Journal of Computer Vision, Reviewer in Journal of Imaging & Sensing and Journal of Computing and Communication and also Convener for the two international conferences of Smart System, Innovation and Computing (SSIC) in collaboration with Springer.

**Bhanu Pratap Soni** received the Bachelor of Technology with honors in Electrical Engineering and Master of Technology degree with honors in Power System Engineering from the Rajasthan Technical University, Kota, India, in the years 2011 and 2014, respectively, and submitted his thesis in Intelligent Power Systems for Ph.D. degree at the Department of Electrical Engineering, Malaviya National Institute of Technology (MNIT) Jaipur, India, in 2019. He is currently Associate Professor at the Department of Electrical Engineering at the University of Engineering and Management, Jaipur. He has received Young Scientist Award (under ITS, SERB) in 2018 from the Department of Science Technology, Govt. of India. He has also worked as Research Associate from 2015 to 2018 at the Department of Electrical Engineering, Malaviya National Institute of Technology, Jaipur. He is currently Member of IEEE and IACSIT and has been associated with various scientific societies as Member. He has published around 40+ research papers in SCI, Scopus & peer-reviewed journals and conferences of national and international repute. He is also serving as Reviewer in Applied Soft Computing, Cogent Engineering, International Transactions on Electrical Energy Systems and Scientia Iranica. He has also worked as Associate Chief Editor of Proceedings of 2nd International Conference on Advance Trends in Engineering & Technology (ICATET-2014), ACEIT, Jaipur, India. His background is in the field of artificial intelligence and machine learning, optimization, power system stability, smart grid, optimization and deep learning.



## **Applications of Artificial Intelligence in Engineering** pp 765–780

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# Power Loss Sensitivity and GWO-Based Approach for Optimal Capacitor and DG Allocation in Distribution System

[Kingshuk Roy](#) , [Laxmi Srivastava](#) & [Shishir Dixit](#)

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## Abstract

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In this work, a combination of combined power loss sensitivity (CPLS) and a population-based algorithm known as grey wolf optimization (GWO) algorithm have been proposed for optimal DGs and capacitors (Qc) allocation problem on IEEE 33-bus radial distribution network. The system objective function has been for formulated as constrained minimization of active power loss. Combined power loss sensitivity has been performed to select some sensitive buses