

PROLOGUE**SPECIAL ISSUE DEDICATED TO THE 3RD INTERNATIONAL
CONFERENCE ON RECENT TRENDS IN APPLIED SCIENCES AND
COMPUTING ENGINEERING (RTASCE-2021)**

In the dynamic realm of applied sciences and computing engineering, marked by innovation and collaboration, the 3rd International Conference on Recent Trends in Applied Sciences and Computing Engineering (RTASCE-2021) emerged as a beacon of knowledge and partnership. Virtually convened from December 17th to 19th, 2021, by the prestigious VIT Bhopal University in collaboration with the Indian Institute of Technology (Indian School of Mines), Dhanbad, this conference exemplified the relentless pursuit of multidisciplinary research. It served as a platform for diverse scholars, from seasoned researchers to emerging talents, to converge and exchange insights, exploring an extensive tapestry of topics encapsulated by the conference's theme. RTASCE-2021 was not just a forum for presentations and discussions; it was a nexus of knowledge, fostering enduring connections among attendees. This conference featured keynote addresses, paper presentations, panel discussions, and the invaluable insights of field experts, transcending its role as a mere academic event. It emerged as a networking hub, nurturing peer relationships and laying the foundation for future collaborations. At its core, RTASCE-2021 was a premier interdisciplinary platform welcoming researchers, practitioners, and educators to unveil innovations, identify emerging trends, and confront the challenges defining the boundaries of applied sciences, computing, and engineering. The breadth of topics covered mirrored the expansive reach of these interconnected disciplines.

The success of RTASCE-2021 owes much to the unwavering support and patronage of eminent figures. Hon'ble Dr. G. Viswanathan, Founder and Chancellor of VIT Bhopal University, set the visionary tone as Chief Patron. Mr. Sankar Viswanathan and Ms. Kadhambari S. Vishwanathan, Vice President and Assistant Vice President of VIT Bhopal University, were stalwart Patrons nurturing the conference's growth. Leadership played a pivotal role in academia, with Prof. Rajiv Shekhar, Director of IIT (ISM), Dhanbad, among its Patrons. Prof. Shalivahan, Dean of Research & Development at IIT (ISM), Dhanbad, Dr. Harihara Padhy, Dean of SASL, VIT Bhopal University, and Dr. S. Poonkuntran, Dean of SCSE, VIT Bhopal University, served as distinguished Chairs, guiding the conference towards success. Behind the scenes, a dedicated team, led by Dr. Mamta Agrawal as Organizing Secretary and Dr. Pon Harshavardhanan, Dr. Abhy Kumar Singh, Dr. Jyoti Badge, Dr. G. K. Vishwakarma, and Dr. Promod Kumar Kewat as Convenors, worked tirelessly to shape RTASCE-2021 into the resounding success it was.

Acknowledgments must also extend to Prof. Carlos N. Bouza from the University of Havana, Cuba, whose unwavering support led to the establishment of a special issue in the esteemed journal *Investigación Operacional*. Additionally, the commitment and expertise of Co-Convenors, Dr. D.

Saravanan, Dr. Aprna Tripathi, and Dr. Sayed Mohammed Zeeshan, greatly enriched the conference.

As we embark on this intellectual journey through the corridors of knowledge and innovation, we extend a warm invitation to our readers to delve into the pages of this special issue dedicated to RTASCE-2021. These articles aim to inspire, challenge your perspectives, and ignite curiosity, further advancing the ever-evolving domains of applied sciences and computing engineering. This special issue of RTASCE 2021 presents selected papers from the VIT Bhopal University and IIT (ISM) Dhanbad conference held from December 17 to 19, 2021. These papers underwent rigorous peer review to meet high publication standards. Varsha Sharma's work explores common fixed-point theorems for type (K) compatible mappings in intuitionistic Menger spaces, focusing on the CLR property. Venkanna Bachu and Mamta Agrawal investigate temperature distribution in human body tissue using the Finite Difference Method based on Pennes' bio-heat transfer equation. Neema Tufchi and colleagues analyze gene prioritization methods for schizophrenia using text mining approaches. Nitansh Sherpa and team employ clustering-based data mining for phytoconstituent therapeutic applications from *Arnebia* and *Dactylorhiza* plants. Krisha Shah and Amit K. Parikh address groundwater scarcity using the Differential Transform Method. Tanvi Senjaliya and Hemraj Lamkuche enhance healthcare cloud security with advanced machine learning. Hemraj Shobharam Lamkuche and Suneel Prasad introduce a smart contract-based privilege-pass authentication system for Indian Railways. Gowtham B and others demonstrate self-supervised learning's effectiveness in chest X-ray classification. Kamal Narayan Budholia and Satish Kumar Pawar predict CPU utilization in cloud environments with Newton's interpolation-based methodology. Kumarapandiyan. G and team study water scarcity perception in the Greater Chennai Corporation zone. Mimansha Agrawal, Tanisha Agrawal, and Shubham Gupta analyze ozone pollution in Delhi before and after lockdown measures. Rashmi Bhardwaj and Shanky Garg estimate water quality parameters' entropy to assess the Yamuna River's quality. Pragneshkumar R. Makwana and Amit K. Parikh apply the Double Power Series Method to approximate solutions of the nonlinear Burger's equation. Maitri R. Raval and Amit K. Parikh review dynamic epidemiological models related to HIV/AIDS-associated Tuberculosis. Anamika Maurya and Prabhat Verma present an optimized deep CNN-based obstacle detection system. Ratnamala Badge and Neeru Adlakha investigate non-uniform soil buffer power's impact on two-dimensional phosphate dynamics in maize rhizosphere. Nitin Sharma studies solvent effects on O₂ molecule dynamics using statistical parameters and mathematical modeling involving Langevin stochastic differential equations.

Guest Editors

Dr. Sayed Mohammed Zeeshan

Dr. Pon Harshavardhanan