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Special Issue on

**Mathematics and its Applications in Science and
Engineering**

Guest Editors

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FOREWORD

In this special issue titled “Mathematics and its Applications in Science and Engineering”, we look at the complex relationship between mathematical concepts and their practical uses in many fields. A variety of mathematical fields are represented here, each adding its own thread to the vast fabric of human understanding and creativity.

The core of this issue is Numerical Analysis, Differential Equations, and Optimization, which explores the complexities of numerical methods, solutions to differential equations, and optimization approaches that are essential for solving problems in the real world. Next, we delve into the theoretical and practical implications of mathematical structures by exploring their foundations with Real, Functional, and Complex Analysis.

The exquisite qualities of algebraic structures, topological spaces, and geometric principles are unveiled in talks on algebra, topology, and geometry, which expand the mathematical landscape. In this spotlight, we find computational tools and their practical applications to mathematical approaches in many different domains. This area of study is known as applied and computational mathematics.

A special section delves into the new subject of fractional differential equations, explaining the theory and practical applications that have made it an important part of modern mathematical study. The versatility of fuzzy logic is shown in Fuzzy Logic and its Applications, which delves into the area of uncertainty and decision-making.

With an emphasis on building meaningful models and traversing the domain of probability, Mathematical Modeling and Probability Theory emerge as crucial contributors to comprehending complex systems.

Following this, we explore the state-of-the-art of mathematical applications, where experts in the field share the most recent developments that are changing the face of engineering and science.

Applied mathematics and number theory connect theoretical insights with practical applications, whereas mathematical models and applications demonstrate the plasticity of mathematical constructs in solving real-world problems. Data representation and network analysis are at the heart of what is known as “information theory” and “signal processing,” two fields that converge to shed light on technological communication.

Returning to the very foundations of mathematical analysis, we delve into the basics of functions and equations. Information and graph theory are discussed in the issue, showcasing their critical functions in data representation and analysis of complicated networks.

The guest editors of this special issue would like to express their gratitude to all the authors for sharing their valuable research, and if publication partners for their approval regarding the special issue of the esteemed journal. Guest editors especially thank Prof. B. K. Dass, Chief Editor who supported us in bringing out the special issue entitled “*Mathematics and its Applications in Science and Engineering*”, published by Taru Publications, New Delhi, India.

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