

Journal of Interdisciplinary Mathematics

Volume 27, Number 5, August 2024

Special Issue on

Computational Mathematics and Modeling

Guest Editor

M. Syed Ali

Published by :



Guest Editor

M. Syed Ali

Department of Mathematics

Thiruvalluvar University

Vellore

Tamil Nadu

India

E-mail: syedjessi@gmail.com

FOREWORD

This Special Issue on **Computational Mathematics and Modeling** mainly focuses on applications and methodological research in all fields of computational mathematics and modeling. Computational Mathematics and modelling are two related fields that play a crucial and important role in the development and advancement of various scientific and technological domains. This issue comprises investigations involving the theory, and applications of mathematical analytic tools and techniques which are remarkably wide-spread in many diverse areas of the mathematical, physical, chemical, engineering and statistical sciences.

Computational mathematics involves developing and applying mathematical algorithms and models to solve complex problems using computers. This integrates various mathematical disciplines such as calculus, linear algebra, differential equations, optimization and numerical analysis to develop efficient and accurate algorithms for scientific computation and data analysis. The rapid advances in modeling have created new challenges and opportunities for statisticians. These include statistical inferences in observational studies and other emerging fields which have motivated statisticians worldwide to develop cutting-edge methods and analytical strategies.

Engineers, natural scientists and, particularly researchers and practitioners working in economics and other social sciences use mathematical modelling to solve problems arising in their disciplines. There are at least two identifiable kinds of mathematical modeling. One involves translating the rules of nature or society into mathematical formulae, applying mathematical methods to analyze them and then trying to understand the implications of the obtained results. The other kind is

to use mathematical reasoning to solve practical industrial or engineering problems without necessarily building a mathematical theory for them.

This special issue covers the papers presented in **International conference on Mathematical Modeling Analysis and Computing (MMAC-2023)** held at Holy Cross College, Tirupattur, Tamilnadu, India on 21st and 22nd October 2023. A total of 113 papers were presented out of which 65 papers were recommended for publication. After peer review by two referees, 23 papers have been selected for publication in this issue.

I extend my sincere appreciation to the authors for their invaluable contributions. I also extend my gratitude to the Chief Editor Dr. B. K. Dass who supported us in bringing out this special issue in the *Journal of Interdisciplinary Mathematics*, published by Taru Publications, New Delhi.

Guest Editor :

M. Syed Ali

Journal of Interdisciplinary Mathematics

Volume 27, Number 5, August 2024

Special Issue on

Computational Mathematics and Modeling

CONTENTS

V. SENTHILKUMAR AND K. VENKATESAN	
Odd vertex even edge root square mean labelling graphs	1001–1008
K. SHAKILAJA AND K. BHUVANESWARI	
Nano (1, 2, 3) generalized closed sets in nano tritopological space	1009–1015
P. R. SAKTHIVEL AND L. SIVAKAMI	
Analytical solution of unsteady MHD immiscible fluid with thermal radiation and chemical reaction in a porous medium under heat source	1017–1027
R. SIVASAMY AND M. M. JABARULLA	
Products on interval valued pythagorean fuzzy soft graphs	1029–1037
P. SUMATHI AND S. TAMILSELVI	
Modular chromatic number on inflated graphs of some tree graphs	1039–1052
S. KESAVARANI AND S. L. PRIYA	
Soret-driven influence on unsteady magnetohydrodynamic mixed oscillatory flow in a two-phase channel : Exploring the thermal effects	1053–1065
S. LOGANATHAN, M. THAMIZHSUDAR AND R. MUTHUCUMARASWAMY	
Detailed approaches to heat and mass transfer by exponentially accelerating a fluid over an inclined plate subjected to temperature variation and uniform mass diffusion	1067–1078
S. SAIKA, M. J. BORAH AND D. J. MAHANTA	
Arithmetic mean of interval valued intuitionistic fuzzy soft sets and its application in diagnosing infectious diseases	1079–1090
N. AZHAGENDRAN AND A. M. ISMAYIL	
Exploring the properties and applications of complex fuzzy cut vertices and bridges	1091–1098

I. MOHAN, M. VENKATARAMAN AND K. THILAGAVATHI Investigating utilizations of harmonic univalent functions employing the Prabhakar fractional operator within specific categories	1099–1108
V. PRABAVATHY AND B. PREETHIKA Twin proper neutrosophic fuzzy graphs	1109–1116
S. SHUKLA On almost η -Ricci soliton of Sasakian manifolds	1117–1121
N. KALAIVANI AND E. M. VISALAKSHIDEVI Characterizations of neutrosophic $(\alpha_{\gamma}, \beta_{nc})$ and neutrosophic $\alpha_{(\gamma, \beta)}$ - contra continuous functions in feutrosophic topological spaces	1123–1132
V. D. MURUGAN, R. G. D. GNANAM AND R. SEETHALAKSHMI An investigation on a few properties of the subgroup lattice of 2×2 matrices over $\mathbb{Z}_{11}$	1133–1139
C. SENTHILNATHAN AND S. KARUNANITHI Enhancing telecare medicine security through non-commutative algebra-based authentication	1141–1149
S. PAVITHRA AND G. JAYALALITHA Growth of bacteria is collated with Brownian motion	1151–1161
M. A. BASHA AND M. M. JABARULLA Pythagorean fuzzy shortest hyper path in a network	1163–1173
S. SHUKLA AND A. OJHA Solitons on Kenmotsu manifolds	1175–1183
S. PAVITHRA AND A. MANIMARAN Matrix representation of z -fuzzy soft β -covering based multigranulation fuzzy rough sets and its application	1185–1191
M. SHOBANAPRIYA AND M. RAMACHANDRAN An exploration of the n th order fuzzy differential equations through numerical analysis, employing He's variational iteration method	1193–1198
K. L. M. KUMARAN AND A. RAJALAKSHMI Anti-neutrosophic fuzzy ideals of near-rings	1199–1211
A. DEVI AND L. SIVAKAMI Effect of chemical reaction with heat and mass transfer over an inclined plate	1213–1222
M. SHOBANAPRIYA AND M. RAMACHANDRAN Computing the solution of hybrid fuzzy differential equations with the application of He's variational iteration method	1223–1230