

Interdisciplinary Approaches in Mathematical Sciences

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Editorial

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INTRODUCTION

Mathematics increasingly interacts with other sciences, creating interdisciplinary research that addresses global challenges. This article explores five intersections: bioinformatics, environmental modeling, artificial intelligence, social network analysis, and quantum computation.

Interdisciplinary Contributions

Bioinformatics: Mathematics supports genetic sequencing and protein structure prediction. Algorithms for sequence alignment and probability models help understand biological evolution [1].

Environmental Modeling: Climate change research relies on mathematical models for atmospheric dynamics, carbon cycles, and groundwater systems. PDE-based simulations guide policy decisions [2].

Artificial Intelligence: Mathematics drives AI through optimization, linear algebra, and probability. Reinforcement learning and neural networks are grounded in rigorous mathematical theory [3].

Social Network Analysis: Graph theory and statistics enable mapping of social dynamics, misinformation spread, and influence patterns across digital platforms [4].

Quantum Computation: Quantum algorithms leverage linear algebra and probability to revolutionize computing power, with applications in optimization and cryptography [5].

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