

PREFACE TO THE EDITION

The **Eduschool International Journal of Data Science and Machine Learning (EIJDSML)** is pleased to present its forthcoming issue, which brings together a collection of rigorous and forward-looking contributions at the intersection of theoretical innovation and practical advancement in data science and machine learning. This issue reflects the rapid evolution of the field, characterized by a shift toward efficiency, scalability, and adaptability in increasingly complex computational environments.

A central theme emerging across several contributions is the challenge of scalability and resource efficiency in modern machine learning systems. Addressing the persistent problem of catastrophic forgetting in continual learning, one study offers a detailed exploration of sparse replay strategies that significantly reduce memory requirements while preserving performance. Complementing this, another article investigates state space models as scalable alternatives to transformer architectures, presenting a compelling case for linear-time sequence modeling in long-context applications.

The issue also foregrounds the growing importance of adaptive and automated learning paradigms. A comprehensive examination of hypernetworks highlights their potential in few-shot learning scenarios, where rapid generalization from limited data is essential. In parallel, advancements in Neural Architecture Search (NAS) are critically assessed, with particular emphasis on differentiable and proxy-based methods that dramatically reduce computational costs, thereby democratizing access to automated model design.

Further enriching this issue is a thought-provoking comparative analysis of Kolmogorov-Arnold Networks (KANs) and Multi-Layer Perceptrons (MLPs). By situating these architectures within broader theoretical and empirical contexts, the study illuminates emerging directions in neural network design, emphasizing the trade-offs between interpretability, efficiency, and performance.

Collectively, the articles in this issue underscore a paradigm shift toward leaner, more interpretable, and computationally sustainable machine learning models, while maintaining high standards of accuracy and generalization. They also reflect a growing convergence between theoretical foundations and applied methodologies, paving the way for innovations that are both principled and practical.

The editorial team extends its sincere appreciation to the authors, reviewers, and contributors whose dedication and scholarly rigor have made this issue possible. We trust that this compilation will serve as a valuable resource for researchers, practitioners, and academicians, inspiring further inquiry and innovation in the dynamic field of data science and machine learning.

Dr. Ginne M James
Chief editor

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