NUMTA 2026 Special Session on

Approximation Theory and Applications to Machine Learning and Biomathematics

(special session dedicated to the memory of Professor Ezio Venturino)

Special Session Organizer:

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Approximation theory provides a fundamental mathematical framework for understanding the representation and estimation of complex functions, with deep connections to numerical analysis, data science, and modeling. In recent years, the growing demands of machine learning and biomathematical modeling have stimulated new theoretical developments and computational methodologies in approximation theory. This session aims to bring together researchers working at the intersection of these fields to discuss advances in both the mathematical foundations and practical applications of approximation methods. Topics will include function and operator approximation, kernel-based techniques, sparse and adaptive representations, and approximation properties of neural networks and related models. Applications will span a range of problems in biomathematics and data-driven modeling, such as biological pattern formation, inverse problems in the life sciences, and interpretable learning in biomedical systems. By fostering interaction among experts in approximation theory, machine learning, and biomathematics, this session seeks to highlight emerging connections, identify common mathematical structures, and promote new directions for interdisciplinary research.

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