Special Issue

Artificial Intelligence Driving Transformative Advances in Food Science and Technology

Message from the Guest Editors

Food science has evolved from food preservation to encompass nutrition, safety, and sustainability. At the heart of this evolution is the growing need to understand food systems at the molecular level, driving innovative solutions. The emergence of artificial intelligence (AI), particularly machine learning and deep learning, enables the analysis of large datasets and recognition of complex patterns that traditional methods often miss. AI is revolutionizing food science, from identifying bioactive compounds to optimizing functional food formulations and monitoring changes during processing. It also enhances food safety by enabling rapid contaminant detection and supports sustainability through improved resource use and waste reduction. However, challenges remain, including the need for high-quality datasets and industry adoption. This Special Issue focuses on AI applications in food science, exploring topics such as food constituent characterization, regenerative agriculture, and nutraceutical optimization. We aim to foster collaborative advancements that will shape the future of food science through AI-driven innovations.

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