THE USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT) IN FOOD ENGINEERING: REVIEW AND PERSPECTIVES

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According to the 2017 revision of the World Population Prospects database by the United Nations, the current world population of 7.6 billion is expected to grow reaching 9.8 billion in 2050 and 11.2 billion in 2100, so the food supply also will have to increase. Food production and security are major issues for feeding an increasing world population. New technology is being developed to allow for improving food production, safety and quality. Food engineering encompasses a wide range of activities in a multidisciplinary approach. It combines microbiology, applied physical sciences, chemistry and engineering for food and related industries. In the development of food engineering, one of the many challenges is to employ modern tools, technology and knowledge to develop new products and processes. In the framework of food engineering, it is widely recognized that information and communications technology (ICT) today plays a key role in ensuring a sustainable and inclusive growth of agriculture. ICT is a wide term that includes micro and nano-electronics, signal processing, communications, remote sensing, control systems, big data and biosystems; nano-materials, low-cost miniature and wearable sensors, satellite and airborne imaging, robotics and big data analytics are some of the applications that ICT can offer to the agricultural and food sector. In this work we first review the state-of-the-art of using ICT in food engineering and then draw some perspectives on possible evolutions of food processing that could improve the level of safety and automation for the food industry. In particular, we focus on the integration between 5G (the next generation of wireless communication networks that will have much higher transmission speeds and capacity and much lower latency than existing cellular systems), Internet of Things (IoT), artificial intelligence (AI) and machine learning (essential to make 5G a smarter network), big data collection and processing systems.

Biography

Marco Pellegrini received his M.Sc. in Telecommunications Engineering from University of Firenze (Italy) at the age of 26 and completed his Ph.D. in Methods and Technologies for Environmental Monitoring at the age of 31 (University of Basilicata, Italy). He is a contract Professor of Physics and Remote Sensing, both at Universita Politecnica delle Marche (Italy) and is also a professional Telecommunications and Systems Engineer. He has published more than 20 papers in reputed journals and conference proceedings and has been serving as a peer reviewer and technical program committee (TPC) member for international conferences.

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