Organized Session 9

AI, IoT and Robotics in Agriculture and Livestock Farming

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Concept of Organized Session

The advances in computer technology and the rapidly decreasing costs of hardware have now brought us to the time when the widespread application of intelligent machines in agriculture and livestock farming. Considering the increased population and limited resources, we need a smarter approach to competitive and sustainable farming. At present, Artificial Intelligence (AI), Internet of Things (IoT), and robotics technologies have led agriculture into a new era of smart farming. Although these technologies still have challenges and limitations, the application and exploration of these technologies in smart farming can improve management efficiency, reduce production costs (e.g. labor force, and energy), and enhance production yields (e.g. grain, rice, meat, milk). In addition, robots combined with AI techniques could autonomously monitor plant growth and livestock welfare, collecting data and making high-efficiency management strategies to achieve quantitative and qualitative results in the farming process.

This session aims to highlight the latest research in AI, IoT and robotics relevant to the automation of agriculture and farming processes. The main topics of the special issue are as follows: (1) Automatic perception and navigation in agricultural applications; (2) UAV or drones in agriculture; (3)Robotics for plant production and animal farming systems; (4) Robotics for plant phenotyping; (5)Machine learning and artificial intelligence in agriculture; (6) Sensors and sensing techniques for agriculture; (7) Sensors for automated animal and environmental management; (8) Management and maintenance of agricultural robots; (9) Big data and IoT for agriculture.

**Keywords:** Agricultural robots, Intelligent perception, Precision Agriculture, livestock farming, Artificial intelligence.