CALL FOR PAPERS
5ᵗʰ IEEE International Workshop on Smart Agriculture (SmartAgr)

June, 2026

https://smartagr.santannapisa.it/

In conjunction with IEEE Int. Conference on Smart Computing (SMARTCOMP 2026)

The agricultural sector is currently undergoing a profound transformation driven by the need to support a growing global population. To meet the projected food demands of 10 billion people by 2050, farming is transitioning from traditional methods to a high-tech, data-driven industry. This evolution is characterized by the integration of advanced ICT frameworks designed to optimize the use of natural resources—primarily water and soil—while maximizing yield and operational efficiency.

The initial phase of **Smart Agriculture** introduced technologies such as the Internet of Things (IoT), wireless communications, and Artificial Intelligence (AI) to enhance production. Today, the sector is moving toward a more comprehensive approach: the **AgriNexus**. This model focuses on the strategic management of the **Water-Energy-Food-Environment (WEFE)** nexus, where technological innovation serves as the bridge between resource management and industrial productivity. Furthermore, Climate-Smart Agriculture (CSA) provides the scientific and technological solutions required to make agriculture more resilient to climate changes, addressing the protection of natural resources, meeting increased food needs while mitigating the challenge of soil shortage.

The 5th International Workshop on Smart Agriculture (SmartAgr) is dedicated to investigating the design, implementation, and assessment of innovative technological solutions, including new paradigms, methods, systems, and tools necessary to ensure the effective implementation of Smart Agriculture creating a more connected and efficient agricultural ecosystem.

The workshop invites participation from both academia and industry across the world providing a platform to exchange ideas discussing cutting-edge research to actively encourage the cross-fertilization of ideas and competencies, leading to more robust and innovative solutions for sustainable and efficient agriculture.

The papers should address forefront research and development in Smart Agriculture with a particular focus on, but is not limited to, the following topics:

- Advanced ICT Technologies for Monitoring and Data
    - IoT (Internet of Things) and Wireless Sensor Networks (WSN), and UAV-based sensing platforms for monitoring crops, soil, water, livestock, and machinery.
    - New paradigms in communications technologies (e.g., 5G, LoRaWAN, Wi-Fi) and embedded systems for seamless data transmission in rural and remote environments.
    - Cloud/Fog/Edge Computing architectures for local and real-time processing of agricultural data.
- Data Analytics and Artificial Intelligence (AI)
    - Machine Learning (ML) and Deep Learning models for predictive analytics (e.g., yield forecasting, pest/disease outbreak prediction), using local, proximal or remote sensing data (e.g. weather data, soil sensors, satellite and UAV imagery).
    - Computer Vision and image processing techniques for automated monitoring (e.g., crop health, weeding, stress detection).
    - Development of intelligent Decision Support Systems (DSS) for optimizing resource usage (e.g., fertilizer, water, pesticides) and decision-making.
    - Use of Big Data Analytics to manage and synthesize heterogeneous agricultural datasets.
- Resource Management and Environmental Sustainability
    - Smart Water Management and irrigation systems to improve water use efficiency and combat droughts.

- o Precision Agriculture techniques for optimized agrochemical applications, aiming to reduce pollution of natural resources (water and soil).
- o Methods for soil health monitoring and preservation, including biodiversity tracking and reduced tillage strategies.
- o Solutions for sustainable energy integration in farm operations (e.g., solar, wind, biomass). Pervasive computing and embedded systems solutions enabling Smart Agriculture.
- Smart and Sustainable Agri-food Chain and Logistics: Technologies for traceability, smart logistics, and resource optimization in the post-harvest phase.

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