ELECTRICAL, ELECTRONICS AND COMMUNICATIONS ENGINEERING

DET - Electronics for climate-smart agriculture

Funded By	Dipartimento DET
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Context of the research activity	ICT technologies can nowadays be used to implement eco-effectiveness and eco-efficiency in food production. These targets can be reached by developing a system of technologies providing the means for observing, assessing, and controlling agricultural and food production. The project approach will be application-driven, i.e., the project will start from farmers' and consumers' needs, considering the food chain as the driver to develop optimized solutions for Climate-Smart Agriculture.
Objectives	The fundamental pillars of the implementation will be: - Holisticness of Approach, by adopting a systemic design, able to see the interconnections among all the actors of the food system, considering the complete food chain for the generation of design specifications, reconnecting humans to the ecosystem's balance. - Sustainability (environmental, social, and economic) and Circularity for Sustainable Technologies (Circular Economy for Food), by implementing ultra-low-cost, autonomous (energy harvested), ultra-low-power and ultra-low-cost devices and systems, implementing solutions for saving water, land, air, biodiversity, renewable and not-renewable raw materials; avoiding the use of pesticides and treatments that could jeopardize the balance between ecosystems. - Study of innovative IoT and microelectronic solutions for reaching the application targets of ulta-low-cost and ultra-low-power devices.
Skills and competencies for the development of the activity	- Design of smart electronic systems and devices, also based on microelectronic custom ICs. - Design and implementation of electronic boards, in particular for sensors, readout and interfaces for custom ICs. - Design and implementation of firmware level software, for applications working at fog and edge levels.