IoT in robotic systems for agriculture

Opportunities

Robots are becoming part of IoT systems, making precision agriculture part of Agriculture 5.0, where a growing number of autonomous vehicles will have an important role in crop management. The coverage of IoT-specific network infrastructures allows a number of measurement and actionable devices to be connected to the cloud, allowing to increase the accessibility to knowledge, assistance, and to the market while reducing prices.

Solution & expected outcomes

Several types of sensors will be used- cameras and metering systems, placed on board or in the field. Some will be part of the end product and others will be used for testing and validation. On-board cameras will be used to adjust/verify the efficiency of laser-based weeding systems, while filed cameras cooperate in operation security defining a virtual fence. Field sensors will be used to monitor the crop and environment, other to improve in-row weeding and verify soil properties.

Practical aspects

Test of available technologies is ongoing, including network coverage in the involved countries, sensor powering, placement and connectivity protocols. A test of boards together with platforms for IoT device data ingestion and storage have been tested together with their costs and interfacing options.

Solutions have been discussed and tuning of undergoing design has been discussed with developers (robot platform, laser system, weed identification and pointing system), and finally trial and experimental field researchers.

Authors: University of Bologna (UNIBO)
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