

Ladybird puts field robotics on award-winning level

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The Ladybird in action on Cowra beetroot farm

Mention a farming robot and one might think of a machine only designed to do the fundamental physical tasks of lifting, picking, sorting. A robotics expert at the University of Sydney has been working on a more sophisticated level. Professor Salah Sukkarieh was awarded Researcher of the Year by the Australian Vegetable Industry 's peak vegetable industry body, AUSVEG, for his work on intelligent farm robots, especially Ladybird. This robot was designed and built specifically for the vegetable industry and could eventually have

significant implications for the industry. Ladybird is described as a robot with a focus on broad acre agriculture. It would not be possible to say the robot is merely a physical picker-upper. This is a robot with intelligent software designed for farm improvements. The robot is equipped to conduct mapping, classification, and detection of pests for a variety of vegetables, among other functions. Its array of sensors have been designed to detect vegetable growth and pest species. Sensors include lasers, cameras and hyper spectral cameras.

"Part of our research program is to find new ways to provide valuable information to growers about the state of their paddocks," said Sukkarieh. Why the name Ladybird? "The researchers gave it that name because it looks bit like one, ABC Rural was told, with its red covers with black from the solar panels.

The Ladybird is solar-electric powered and was charged before taking off for the onion, beetroot and spinach fields of Cowra, a town in the Central West region of New South Wales. The [robot](#) was fully operational for three consecutive days on the farm.

Reports said the robot was successfully able to drive autonomously up and down rows with precision—meeting the project goals to test out how well Ladybird can drive itself around a farm.

Dr James Underwood, senior research fellow from the university's Center for Field Robotics, developed the robot sensors that will gather a range of farm intelligence. "It's our hope that with that data, and some algorithms that we design back in the lab, we can process that information to produce useful data for farmers to manage their crop," he said in ABC Rural.

Ed Fagan, who owns the farm in Cowra in central-west NSW, said he thought the instrument could be beneficial and, in ABC Rural, explained

why:

"A lot of the [time](#) in horticulture, if you're short of an element in the plant, by the time you see a symptom it's too late, they will be able to pick up a nutrient deficiency before we see any symptoms. Secondly, you can use it at night at 2 o'clock in the morning and go out and do an insect survey, so things like cutworm popping out at night time, slugs, worms, things like that." He added, "Instead of getting out of bed at 3 o'clock in the morning and wandering around with a torch and looking at about five square meters, this thing could do two or three hectares at night and then in the morning you can just see what you've got."

Sukkarieh is regarded as an international expert on field robot systems; he has consulted to industry including Rio Tinto, BHP, Patrick Stevedores, Qantas, QLD Biosecurity, among others. Field robotics takes on special meaning in the way he describes his work: "My work involves developing robotic devices and intelligent systems that can operate 24/7 in outdoor environments. These are devices that can perceive and understand their environment, make informed decisions about any actions required and then carry out those actions - all without direct human input."

Regarding farm processes, he said the automation of on-farm processes is poised to play a decisive role in minimizing input and maximizing output of future agriculture. Automation can help to increase efficiency and yield, by having many manual tasks of farming performed by specially designed agricultural robotic devices.

More information: — sydney.edu.au/news/84.html?new...=2&newsstoryid=13686

— sydney.edu.au/engineering/peop.../salah.sukkarieh.php

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