

Remote-controlled Venus flytraps could join IoT

By E&T editorial staff

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Singaporean researchers have demonstrated that a Venus flytrap can be controlled using signals sent via a smartphone. They hope that this could open the door to a range of technologies making use of the plants, from plant-based robotics to environmental monitoring.

The Nanyang Technological University (NTU) study produced a communications device which can deliver electrical signals between the plants and connected devices such as phones. A conformable electrode is placed on the surface of the plant using a hydrogel for the collection and transmission of electrical signals; this allows the researchers to monitor how the plant responds to its environment and what might cause it to close its leaves, respectively.



REUTERS/Joseph Campbell

“Plants are like humans: they generate electric signals like the ECG from our hearts. We developed a non-invasive technology to detect these electric signals from the surface of plants without damaging them,” Dr Luo Yifei told Reuters.

Plants produce very weak electrical signals, meaning that the electrode must be in strong contact with the hairy, waxy and irregular surfaces of plants. The NTU researchers had managed this problem using a type of hydrogel known as a thermogel, which transforms from liquid to a stretchy gel at room temperature, as their adhesive. This made it possible to attach the electrode to various surfaces and improve signal detection, even as the plants move and grow.

The researchers attached the 3mm electrode to the hairy surface of the Venus flytrap and used a smartphone to transmit electric pulses, causing the plant to close its leaves on demand. By attaching the flytrap to a robotic arm, they used this mechanism to pick up a small piece of wire in the plant’s leaves.

Singapore scientists control plants using smartphones



“We are exploring using plants as living sensors to monitor environmental pollution like gas, toxic gas or water pollution,” Luo added, commenting that there is a lot of work to be done before plant technologies can be used commercially.

Their findings, which were published in *Nature Electronics* earlier this year, demonstrate the potential for plant-based technologies. Among other possibilities, these could include soft robotic grippers for handling fragile items which would be damaged by industrial grippers and agricultural monitors for detecting signs of crop disease early.

Darren Ng, founder of a group that sells the plants and offers care tips, welcomed the news of two-way communication with Venus flytraps: “If the plant can talk back to us, maybe growing all these plants may be even easier.”