

IOT FLOOD SENSORING

LOW-POWER AND ROBUST SENSOR NETWORK FOR FLOOD MONITORING AND MANAGEMENT

Funding granted: AUD 400,000

CONTEXT

Every year, severe urban flooding deteriorates life quality and economic growth in Ho Chi Minh City (HCMC), the most urbanised and largest city in Vietnam. Floods badly affect more than 60% of the HCMC citizens and cause billions of dollars of loss every year. Several flood detection systems have been attempted in the past, such as cameras and conventional sensors combined with traditional wireless communication protocol, which have raised challenges in cost, transmission range and power consumption. Additionally, hot and humid weather, and polluted sewage water also often lead to poor performance and shortened lifetime of these flood sensor systems.

SOLUTION

Researchers at Griffith University and Saigon Hi-Tech Park (SHTP) Labs will develop an innovative low-power consumption wireless sensor network for flood monitoring. The core sensor technology is based on Griffith University's silicon carbide sensor technology, which allows mass production of tiny sensors with high sensitivity, low power consumption, and excellent robustness. This technology will be combined with the latest IoT (Internet of Things) wireless communication technology to develop a robust, low-power consumption and long-range transmission flood sensor network.

Hundreds of the sensors deployed throughout HCMC will act like the City nervous system providing real-time flood information and early warning to citizens in the city via a mobile phone app. The system will also assist the City authorities in traffic management and control, mitigating human and economic losses. This sensor network is also the essential first step to developing an automated response system to prevent local flooding in the city using stormwater drainage infrastructure to capture, divert or pump water to designated areas. The project will directly improve the ecosystem, safety, and productivity for millions of people living and working in the city. Upon completion, the system can be expanded to other cities and regions in Vietnam and in other countries that are affected by flooding.

KEY ACTIVITIES

1. Transfer Griffith's silicon carbide flood sensor technology to SHTP Labs;
2. Deploy a low-power flood sensor network in flood-affected areas in HCMC;
3. Establish a service that provides real-time flood monitoring and early warning to citizens via a phone app;
4. Raise public awareness of the issues caused by flooding as well as promote a new efficient technological solution;

This initiative is funded under the competitive grant work stream of Aus4Innovation, a flagship four year, AUD 11 million partnership program designed to help strengthen the Vietnamese innovation system and prepare for Vietnam's economic and digital future. The program provides funds to scale already tested ideas to address emerging challenges or opportunities in any sector of Vietnam's innovation system.

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