

IoT based Horticulture Monitoring System

Monika Rabka

Abstracts:

In the era of climate change and global warming-controlled environment agriculture and horticulture are rapidly becoming essential parts of the food-producing industry. Vertical farms, hydroponics and urban greenhouses can be found in cities worldwide as we transform the ways we produce food. Additionally, recent implications of the COVID-19 pandemic prove that as a society we can harness the benefit of remote monitoring and automation for agriculture and horticulture.

This research focuses on Internet of Things (IoT) based Real-time Autonomous Monitoring System for horticulture and controlled-environment agriculture (RAHMS). The work outlines the design methodology of a simple solar powered proof of concept product and its core hardware / software components.

The RAHMS is based on three components: i) IoT enabled low cost commercially available microprocessor, ii) a range of sensors and actuators and iii) cloud connected firmware and mobile application. The mobile application linked to cloud databases such as Firebase and MATLAB ThingSpeak allows viewing of the greenhouse crop data and camera feed of plants in addition to the access and display the sensor data.

This research project aimed to develop a low-powered and inexpensive monitoring system for small to medium, remote greenhouses that can access the Internet, either in the form of broadband, satellite, or 3G/4G access points. This system has potential to further advance the practical aspects of the remote solutions for crop cultivation and monitoring for horticulture and controlled environment agriculture. first

section will present the creative ways in which services funded under the Lottery Women and Girls Initiative adapted to remote delivery and reflect on the learnings. The second part draws on interviews with 15 frontline workers and asks at what and whose cost have services been maintained and even expanded over the last 15 months.