SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)
Tools and Technology in Support of Integrated Applications (1)

Author: Mrs. Arys Carrasquilla-Batista
Instituto Tecnológico de Costa Rica (TEC), Costa Rica

Dr. Alfonso Chacon-Rodriguez
Instituto Tecnológico de Costa Rica (TEC), Costa Rica

INTEGRATED PROCESSING AND CONTROL OF MULTIPLE ENVIRONMENTAL VARIABLES THROUGH INTERNET OF THINGS (IOT) USING COTS COMPONENTS

Abstract

Currently, the most common method of measuring environmental variables in agriculture and research centers is through multiple electronic devices that work uncoordinated, each device acquire different data of interest, for example, humidity, temperature, carbon dioxide, luminosity, solar radiation, among others. This is, however, slow and often tedious method that requires producers and researchers to use multiple measuring devices, usually one for each variable to be measured, and install and manipulate different software tools for reading and processing information, which generally will be integrated manually into a single database. In addition, these devices typically only record the maximum and minimum data for these variables and also require the presence of a person every time that a data of interest needs to be recorded in the field or in the laboratory. In the last decade, a lot has been done about integrating devices and sensors by using wireless sensor networks, it is common for most commercial proposals or academic networks to deal with short range and low processing capacity, this limitations are due to low outcome processing platforms and communications devices. Is usual the need to restrain costs and energy, especially when the developed devices should be installed in remote sites. To solve this issue we are developing an electronic system that will acquire multiple environmental variables through Internet of Things (IoT) using commercial off the shelf (COTS) components. However, the emergence of wireless technologies for 3G and 4G on one side (coupled with the falling cost of these communication systems) and the rise of the Internet of Things (IoT) sometimes referred as the Internet of Everything (IoE), now offers a much more viable and practical solution for the integration of multiple sensors, this integration is sometimes called “multisensor data fusion” and it solves the problem of using several devices in a single site. Using Internet as the platforms to connect a single device with multiple sensors and connect it to “The Cloud” will minimize the limitations of range and speed of a wireless sensor network.