CMPE-BLGM 405 Project Proposal - Fall 2017/18

Greenhouse Controller

Modern world started to focus more attention on building better greenhouses to meet the requirements of both commercial growers, as well as hobby oriented organic planters. Main objectives of modern greenhouses are

1- Quick and easy build
2- Completely maintenance-free after construction
3- Minimum amount of non-recycled polluting items

A greenhouse controller is a digital electronic controller which can do the following tasks and has the following properties:

- Accurately monitors and controls CO_2 levels
- Controls a heating device, a cooling device, and a humidity device for separately set day and night temperatures
- Remote (5 meter) temperature, humidity, and CO_2 level sensors
- Contains reporting facilities for hard and soft errors, restarts on hard errors with minimal loss.
- Adjustable temperature and humidity bands
- Contains strategies for Temperature-CO_2-humidity compromise
- Built-in data logger records the min and max: temperature, humidity, and CO_2 levels
- Low component cost,
- Easy-to-use

In this project, you may use modern embedded system components such as Arduino, or Rasperberry series boards supported with a self-owned graphical/text display and web based interface. Your project shall include

- A market survey for technical specifications,
- selection and purchase of materials,
- an intermediate report on promised technical specification, task division among team members, and time scheduling of the tasks,
- test of sensor devices,
- proposed design of system and its subsystems, discussing the standards applied for the sensors, sub-units and overall system,
- implementation of subsystems and overall system,
- test of subsystems and overall system,
- a final report that documents the proposed design, implementation stages, results of all tests, finalized design, overall system tests, and a short users manual.