Greenhouse Monitoring System

317/319 Project – Initial Meeting

Contact: Valeria from Humber Greenhouse

September 17, 2019

- introduce ourselves and explain the scope of the project.

- Explain our current ideas/plans and what we are hoping to achieve.

- Valeria explains that they have a system currently installed by a company called Argus Controls

- System consists of sensors/effectors, control panels, power panels, and connects to Argus servers. It can then be accessed/controlled locally from the client PC or remotely by Argus.

- Sensors monitor temperature, humidity, soil moisture, gas levels (CO and CO2), and a weather station monitors light, temperature, wind, rain/snow outdoors.

- Effectors include air vents/fans, a mister, roof shades/curtains, evaporative cooling/heating pipes, and an irrigation system (not enabled).

- The system monitors all the sensors and uses the effectors to control the environment in the greenhouse.

- Most effectors rely on the readings of multiple sensors (ie. curtains rely on light, temperature, and humidity).

- Valeria says the system is mostly managed remotely by Argus, she rarely uses it/adjusts it.

- Valeria may not be the primary user of our app as she doesn’t have a smartphone, but she is very knowledgeable about the greenhouse and its control systems.

- We ask her what the strengths of the system are, she says: the curtains, air vents/fans, the cooling/heating pipes, and that Argus controls it remotely for her.

- She says what’s missing/lacking is: a functional irrigation system, nutrient/seeding system, different “zones” for different types of plants, and adjustable shade/lighting for certain plants (they also do not have artificial lighting/lamps).

- Obviously we can’t implement all of it this semester, but it’s worth considering these features for CENG 355.

- Valeria loans us the Argus installation/control manual. We will read through this to better understand the current system, see what is effective/well done, and what can be improved on.

- We thank Valeria for her help/time and will keep her updated on our progress.

To expand on lacking features:

- the current irrigation system is not “modular”, it can’t adjust to different size plants/pots or different watering needs.

- they did not purchase the nutrient delivery system, but she says it would be very useful.

- it would be good to split the greenhouse into different “zones” based on plant’s needs for water, light, temperature, humidity, etc (ie. a cactus has different needs than a tomato plant).

- have different “zones” for lighting, which would also be adjustable based on plant’s needs (ie. sometimes a plant requires complete shade/darkness, another needs almost full sunlight).

- lastly, Valeria says the curtains could be made more durable as they tear over time (these are special curtains that can block solar radiation, ultraviolet light, etc).