Kickoff Documentation

Group 2

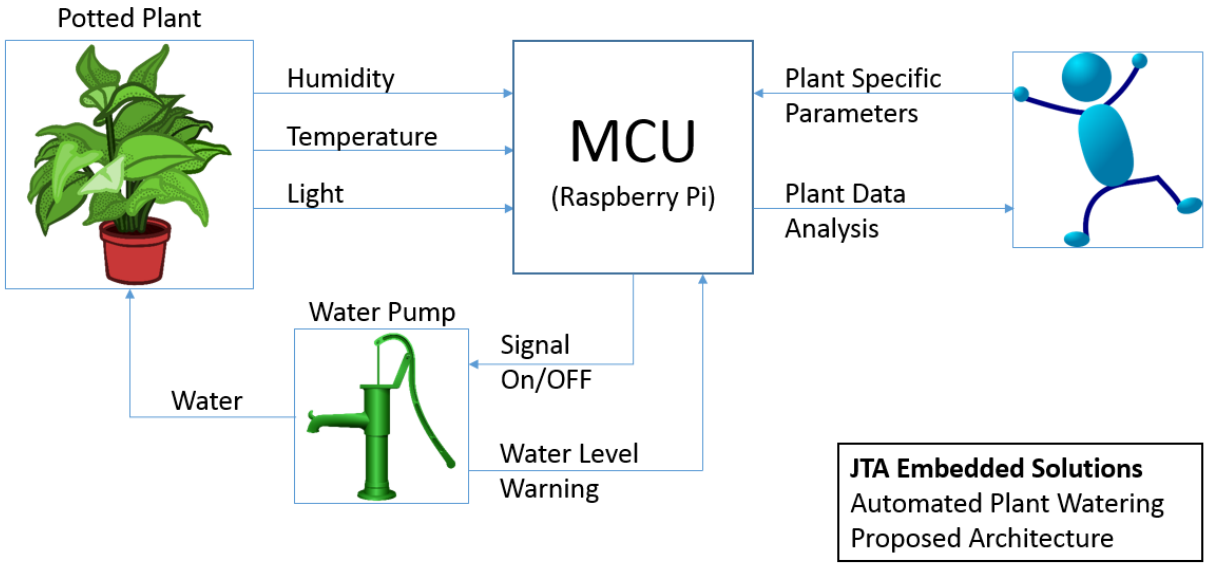
Team Name:
JTA Embedded Solutions

Team Members:
Ajo Cherian Thomas
Jin Taek Lee
Thishone Wijayakumar

Team Member Project Roles:
Thishone Wijayakumar – Project Manager/System Architecture/Software
Jin Taek Lee – Software / Hardware
Ajo Cherian Thomas – Hardware / Software

Project Overview:
The project is based on a smart plant monitoring and watering system. This system is specifically for indoor potted plants. The overall view is for a user to add this system to a potted plant, and only specify soil humidity thresholds or watering schedule. The system will automatically run for the specified parameters, while also monitoring environmental data such as Soil Humidity, Air Humidity, Temperature and Light exposure. As this monitoring happens over time, it will allow the user to get a better idea of the conditions the plant is in, and whether something needs to be changed. For example: Excess light exposure, insufficient heat, etc. The watering schedule and amount will be changed automatically by the system based on monitored data.

Fig 1.1 – Proposed System Architecture



Proposed Schedule:

Week & Date	Milestone	Task	Owner
1 – Sep 10	Kickoff – Sep 11 Part Selection – Sep 15	- Kick Off Documentation - Water Pump Hardware Research - Soil Humidity Sensor Research - Part Selection Documentation	T A , T J, T A, J, T
2 – Sep 17		- Raspberry Pi Research & Simple Program with GPIO - Get Previous Capstone Project Working - Display Water Pump Working	J, T J, T, A A, T
3 – Sep 24	Initial Software – Sep 25	- Create software to read Soil Humidity	J, T, A
4 – Oct 1		- Create software to read Temperature & Light - Water level sensor	J, T, A
5 – Oct 8		- Create software to control water pump & read water level sensor	J, T, A
6 – Oct 15	Low level software – Oct 16	- Output all sensor data	J, T, A
7 – Oct 22		- Calibrate all Sensors & integrate user specification data	J, T, A
8 – Oct 29		- Water flow control & report	J, T, A
9 – Nov 5		- GUI for data output	J, T, A
10 – Nov 12		- Testing & Debug	J, T, A
11 – Nov 19	Integration – Nov 20	- Full System Working & Testing	J, T, A
12 – Nov 26		- Final Testing & Deployment	J, T, A
13 - Dec 3	Project Completion – Dec 4	- Presentation Prep	J, T, A
14 - Dec 10	Presentation	Presentation	J, T, A

Meeting Minutes:

Meeting Objective: Project Kickoff Meeting
Attendees: Thishone Wijayakumar, Jin Taek Lee, Ajo Cherian Thomas, Ralph Stacey, Robert Elder
Date: September 11, 2018
Time: 12:30 PM

Project Scope Discussion with Ralph Stacey & Robert Elder

- We need to measure soil humidity, air humidity, ambient light, and ambient temperature
- System needs to be self-learning: It should control water flow based on humidity level
- How can we detect different plants? – Allow user to input Humidity thresholds or watering schedule
- Pots without hole in bottom will retain water at the bottom of soil – Do we need multiple sensors and different depths?
- Feedback data to user – Too much light? Too cold? Etc.
- Consider power consumption, cost, size, environment
- Indoor plants only?
- Water detection level for the water reservoir to warn user to refill water
- Switch to control external light?
- Scalability? : Do we want to add many plants as possible? Should we then create a dumb sensor or smart sensor?

Meeting End Time: 1:30 PM

Further discussions and thoughts of expanding project:

Group Discussion about scalability

- Do we want to build a smart sensor or a dumb sensor that talks to a central hub within the house
- The idea was to use a wireless protocol such as Zigbee to communicate data from the sensors to a central hub, which will communicate to a server and make decisions
- This allows any number of plants to be added to the house

Final Discussion with Robert Elder

- Scalability is not a concern
- Robert would rather have an over engineered system working on one plant

Final thoughts

- Create a one plant smart monitoring and watering system
- Gather data & make decisions on watering schedule, and warn user about external conditions which may be affecting plants