University of Colorado
Boulder

EMBEDDED INTERFACE DESIGN (ECEN 5783)
SPRING 2021

PROJECT 7

TITLE:
PLANT AUTOMATED WATERING SYSTEM (PAWS)

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Updated Work Breakdown Structure

1.1 Design

1.1.1	WBS	Team	M
1.1.2	UML Use Cases	Team	M
1.1.3	UI Wireframes	Mike	L
1.1.4	Architecture Diagram	Bryan	S
1.1.5	Wizard of Oz	Team	L

1.2 Subsystem Implementation and Integration

1.2.1 Hardware Interfaces

1.2.1.1	Humidity Sensor Functionality	Bryan	L
1.2.1.2	Sensor → Xbee Dev Board	Bryan	L
1.2.1.3	Xbee → Raspberry Pi	Bryan	L
1.2.1.4	Raspberry Pi IOT Thing	Mike	L

1.2.2 Software Interfaces

1.2.2.1	Thing Rules	Team	M
1.2.2.2	DynamoDB Setup	Mike	M
1.2.2.3	AWS SNS Notification	Bryan	S
1.2.2.4	API Gateway		
1.2.2.4.1	RESTful API	Bryan	M
1.2.2.4.2	HTML User Interface	Mike	M
1.2.2.5	Qt User Interface	Mike	L

1.3 System Test

_____	1.3.1	Subsystem Tests	Team	L
	1.3.1.1	UI Customer Review	Team	M
	1.3.1.2	Moisture Tests	Bryan	L
	1.3.1.3	Xbee Communication	Bryan	M
	1.3.1.4	IOT rules verification	Team	M
	1.3.1.5	AWS Sensor Data Storage	Mike	M
	1.3.1.6	UI -> API Gateway Tests	Mike	M
	1.3.1.7	Data Collection	Team	L
	1.3.2	System Test	Team	L

1.4 System Rollout

_____	1.4.1	Project Documentation	Team	L

Component List

Hardware Components

- Soil Moisture Sensor (Adafruit 4026)
- 2x XBee3 Zigbee (XB3-24Z8UM-J)
- Raspberry Pi 4

Hardware Interfaces

- 4026 -> Xbee (I2C)
- Xbee <-> Xbee (Zigbee)
- Xbee -> Raspberry Pi 4 (UART)

Software Components

- Qt UI
- HTML UI
- AWS
    - Lambda
    - DynamoDB
    - API Gateway
    - IoT Thing
- Gateway (data collection and AWS integration)
- XBee micropython app

Software Interfaces

- UI's <-> AWS (RESTful API calls)
- Xbee Send/Receive
- AWS gateway <-> AWS (MQTT)
- Sensor Data DB (Dynamo)