ESE 516: Assignment A7

**Creating the Node-Red dashboard for Radiance-T project**

* **Messages from Device ---- MQTT---- IBM Bluemix**

**Topic 1 :** LocationData

**Type :** Number

**JSON Structure:**

*var long1;*

*var lat1;*

*msg = {*

*payload: JSON.stringify(*

*{*

*d:{*

*"loc" :*

*{*

*"long" : long*

*"lat" : la1t },*

*}*

*} )*

*};*

*return msg;*

Information – Sends the location coordinates or device id to display on the

Board. The graph on dashboard shows the location map.

**Topic 2 :** TempData

**Type :** Number

**JSON Structure**

*Var temp1*

*msg = {*

*payload: JSON.stringify(*

*{*

*d:{*

*“temp” :temp1*

*}, } } )};*

*return msg;*

**Information** – Sends the temperature data from IR temperature sensor on the device to

display and analyze temperature on cloud. The graph on dashboard shows the temperature history over time.

**Topic 3 :** ImageData

**Type :** Number Array

**JSON Structure**

*Var image1=[1,2,3,4,5,6,7,8]*

*msg = {*

*payload: JSON.stringify(*

*{*

*d: {*

*“img” :{one: image1[0],two:image1[1], three:image1[3], four:image1[4]*

*}, } } )};*

*return msg;*

**Information –** Sends the raw thermal image data group of bits/pixel from thermal camera on the device to display and analyze it on cloud.

**Topic 4 :** ServoData

**Type :** Number

**JSON Structure**

*Var servo1*

*msg = {*

*payload: JSON.stringify(*

*{*

*d: {*

*“servo”:servo1*

*}, } } )};*

*return msg;*

**Information –** Sends the stepper motor feedback/angle from device location to cloud. It is used to check the direction on sensor on device. It also gives rotation and movement of motor.

**Topic 5 :** BatteryData

**Type :** Number

**JSON Structure**

*Var batt1*

*msg = {*

*payload: JSON.stringify(*

*{*

*d: {*

*“batt”:batt1*

*}, } } )};*

*return msg;*

**Information –** Sends the reading of batter power from fuel gauge on device to cloud. It is used to show the amount of power left.

* **Messages from IBM Bluemix------- MQTT------ Device**

**Topic 1: RotationData (ANGLE\_TOPIC)**

**Type :** Number

**JSON Structure**

*int data*

*msg = {*

*payload: JSON.stringify(*

*{*

*d: {*

*data:data*

*}, } } )};*

*return msg;*

**Information –** Sends the specific angle from cloud to rotate the motor on device side

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**Topic 2: StopData (STOP TOPIC)**

**Type :** Boolean

**JSON Structure**

*boolean data*

*msg = {*

*payload: JSON.stringify(*

*{*

*d: {*

*“datat”:data*

*}, } } )};*

*return msg;*

**Information –** Sets continuous rotation of motor on or off- Rotation enable or disable

**Topic 4: LedData (LED\_TOPIC)**

**Type :** Boolean

**JSON Structure**

*boolean data*

*msg = {*

*payload: JSON.stringify(*

*{*

*d: {*

*“data”:data*

*}, } } )};*

*return msg;*

**Information –** Sends signal from cloud to device to test the led on device

**Topic 5: FW\_Data (FW\_TOPIC)**

**Type :** Boolean

**JSON Structure**

*Boolean data*

*msg = {*

*payload: JSON.stringify(*

*{*

*d: {*

*“data”:data*

*}, } } )};*

*return msg;*

**Information –** Triggers OTAFU from cloud on device to download new firmware from server.

**Topic 6: CRCData (CRC\_TOPIC)**

**Type :** String

**JSON Structure**

*Char \* data*

*msg = {*

*payload: JSON.stringify(*

*{*

*d: {*

*“data”:data*

*}, } } )};*

*return msg;*

**Information –** Sends CRC string for OTAFU operation to write on SD card before download and update

**Topic 6: VerData (VER\_TOPIC)**

**Type :** number

**JSON Structure**

*Int \* data*

*msg = {*

*payload: JSON.stringify(*

*{*

*d: {*

*“data”:data*

*}, } } )};*

*return msg;*

**Information –** Sends version number for OTAFU operation to write on SD card before download and update