Home IoT Lab

A Company Internship w/:

UpSkill Campus and

UniConverge Tech, PvT, LtD.

Asian Wireless Tech Company partnered with Texas Instruments

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Domain: IoT Devices

Date: Jan. 2025

From UniConverge's Upskill Campus lab, I learned how to code home- circuits. IoT's switch on/off refrigerators, lights, and other devices automatically, and in a way that saves power.

For my unique touch, look towards the end, sections labeled.

I tested foods with Raspberry Pi. Their sensor kit's great for food data analysis!

UniConverge's Lab Notes:

Materials: Arduino OR Raspberry Pi, LED light, buzzer, ESP8266- microcontroller,

MQTT server- routes messages between IoT devices- reads which home devices are on and off

Relay- switch that boosts power, allows Arduino to control circuits with higher power than it's designed to take

Code:

Declare variables list: voltage/resistance values for devices;

ie devices = [light, fan, freezer]

data_file.read(MQTT server values)

Get values for devices list

for i in devices:
if i = 0:

-relay switches OFF
-switch off resistor i

if Rx = 1:

-relay switches ON
- turn ON resistor i

My unique addition #1: sense temperature to dictate freezer

switch on in-fridge temp. sensor
switch on in-fridge humidity/pH sensor

link sensors to MQTT

declare variable fridge.temp

data_file.read(MQTT server values)

-loop-search file for temp and pH values

set = fridge.temp, fridge.pH

look up medically recommended food temp. set variable = med.temp
look up low-end humidity/pH for airborne bug growth, set variable = bug

if fridge.temp <= med.temp AND fridge.pH < bug:

  switch fridge off

else:
  switch fridge on

My unique addition #2: food- kit

Raspberry Pi, basic sensors:

-soil moisture, humidity, temp, pH = a, b, c, d

-Insert **2-4 sensors** into a **solid dish; ie vegetable or meat-loaf**

-Link sensors to R.Pi,

-Link R.Pi to MQTT server

-server plots data

-take temp, moisture, pH data for **a few healthy, un-spoiled plant-meals, like grains and vegetables**

-store in MQTT server

-compare to other dishes's data