**Design and implantation of non-schedulable appliances power management scheduler**

**Description**:

This non-schedulable appliance scheduler, as parts of smart home modules, aims to save customers’ electrical billing price and protects their privacy. It includes schedulable appliance scheduling module and finite programming module.

**Schedulable appliance scheduling module:**

1. Schedulable appliances configuration includes power consumption and runtime
2. Battery configuration includes total capacity, charging/discharging rate and initial status.
3. Privacy level.
4. Daily real time electrical price.

Based on the real time price, the scheduler will decide the appliances’ start/end running time and the battery charging/discharging time, thus the scheduler will reduce the billing price and protect the behavior of customers.

**Finite programming module:**

Based on initial schedulable appliances scheduling results, this module will insert a non-schedulable appliance at the worst case time slot. Therefore, this new appliance could be considered as a schedulable appliance.

This module will reschedule “n+1” appliances (assume “n” schedulable appliances involved for now) and save the scheduling results as the initial scheduling results. By recursively call the previous step, the final convergence scheduling results will be able to handle all non-schedulable appliance.

**Results**:

Github: https://github.com/bli1/smart\_home

For the results and code, please check the github link.

**Sept 18th – Sept 23rd tasks:**

1. The effect of total battery capacity on billing price.
2. The effect of privacy level on billing price.