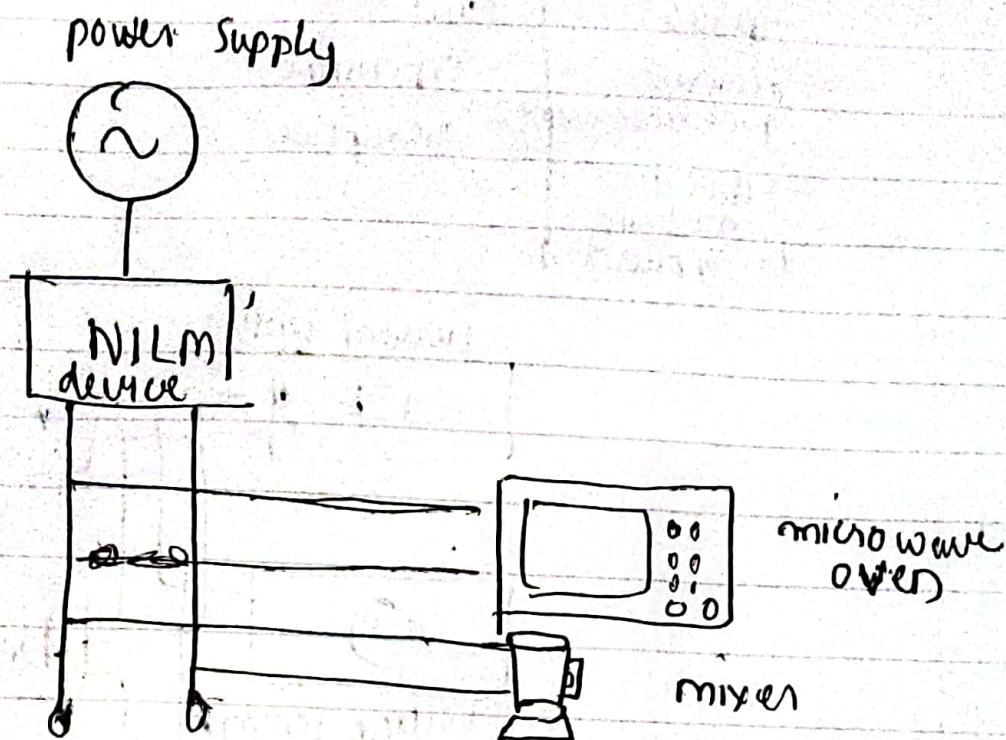Overview of methods to dissaggegate power

One method of disaggregating power
NILM

power supply

NILM → method of deducing what application used in
house & their energy consumption

smart plug sensors → another method of measuring power

pros	cons
- accurate pwo measurement	- expensive
→ direct metering to appliances)	disruptive

Current sensor

Power source

Voltage sensor

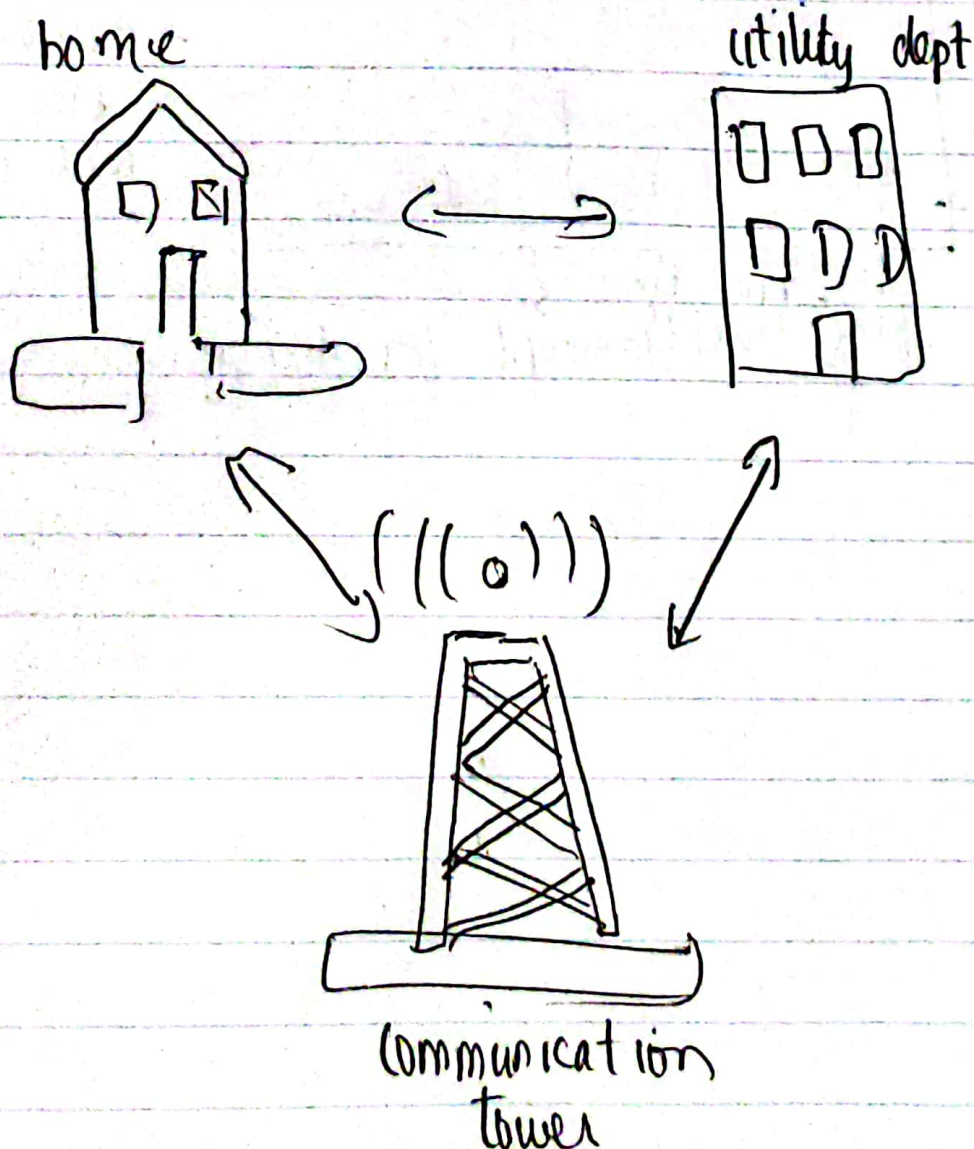Device

Sensor

Relay board
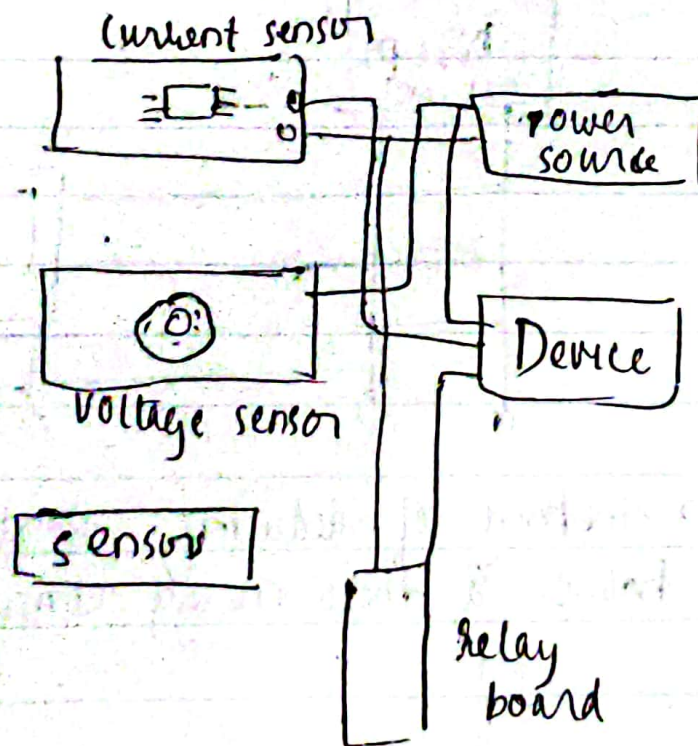
smart plug sensor hardware diagram
work in progress

advanced meter infrastructure → another disaggregation
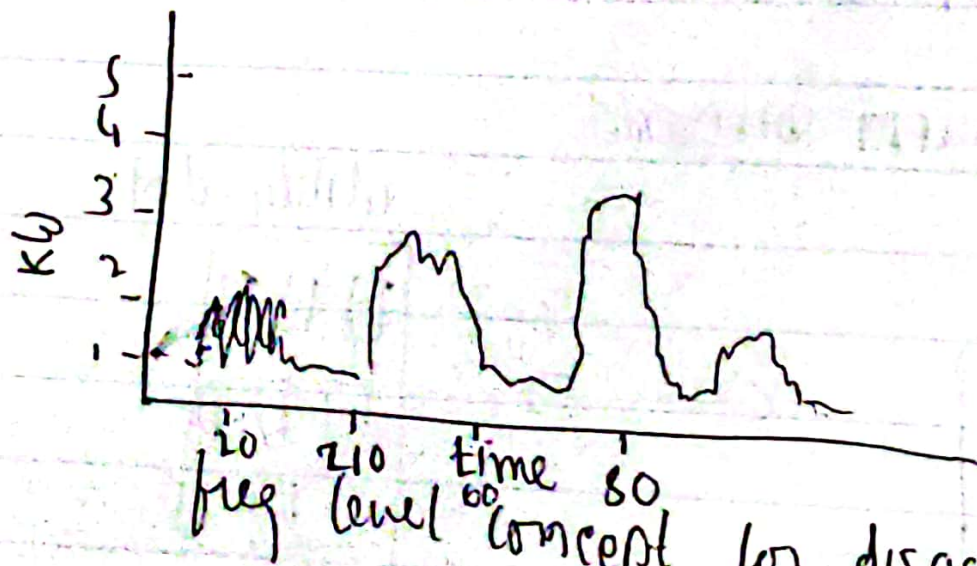   method

pros	Cons
→ wide-spread adoption rate	→ varying results every time
→ provides data at 15 min interval	→ real-time disaggregated feedback not possible

AMI CONCEPT DIAGRAM

home   utility dept

communication
tower

hardware sensors → another method for disaggregation

pros	cons
→ break down diff appliance info	→ lack of utility investment

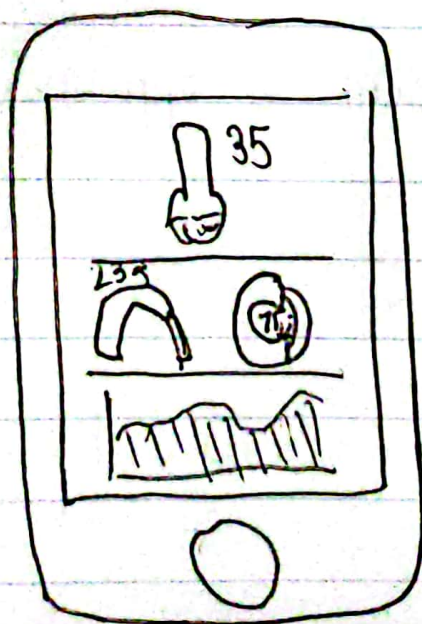→ each variation in freq represents each appliance

freq level concept for disaggregation

concept

-> a meter that measures ~~ener~~ diff energy levels
-> ~~a~~ such as temp, voltage, current & power
-> a human machine interface & or phone app that users could download.
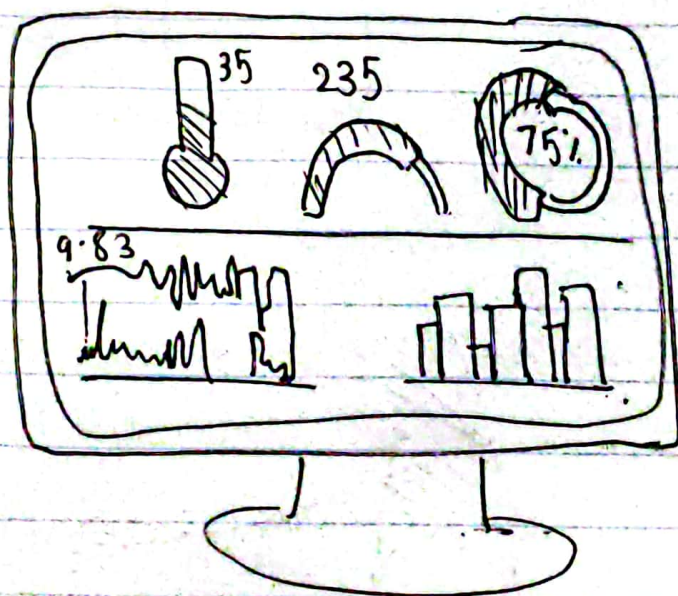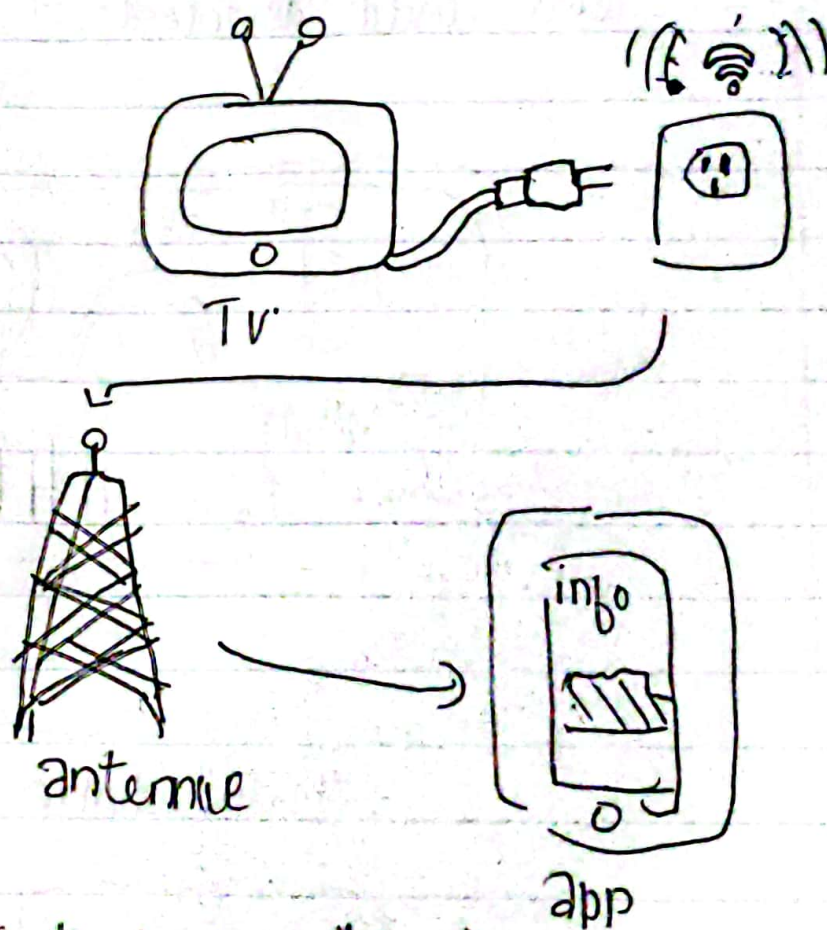

Remote dashboard
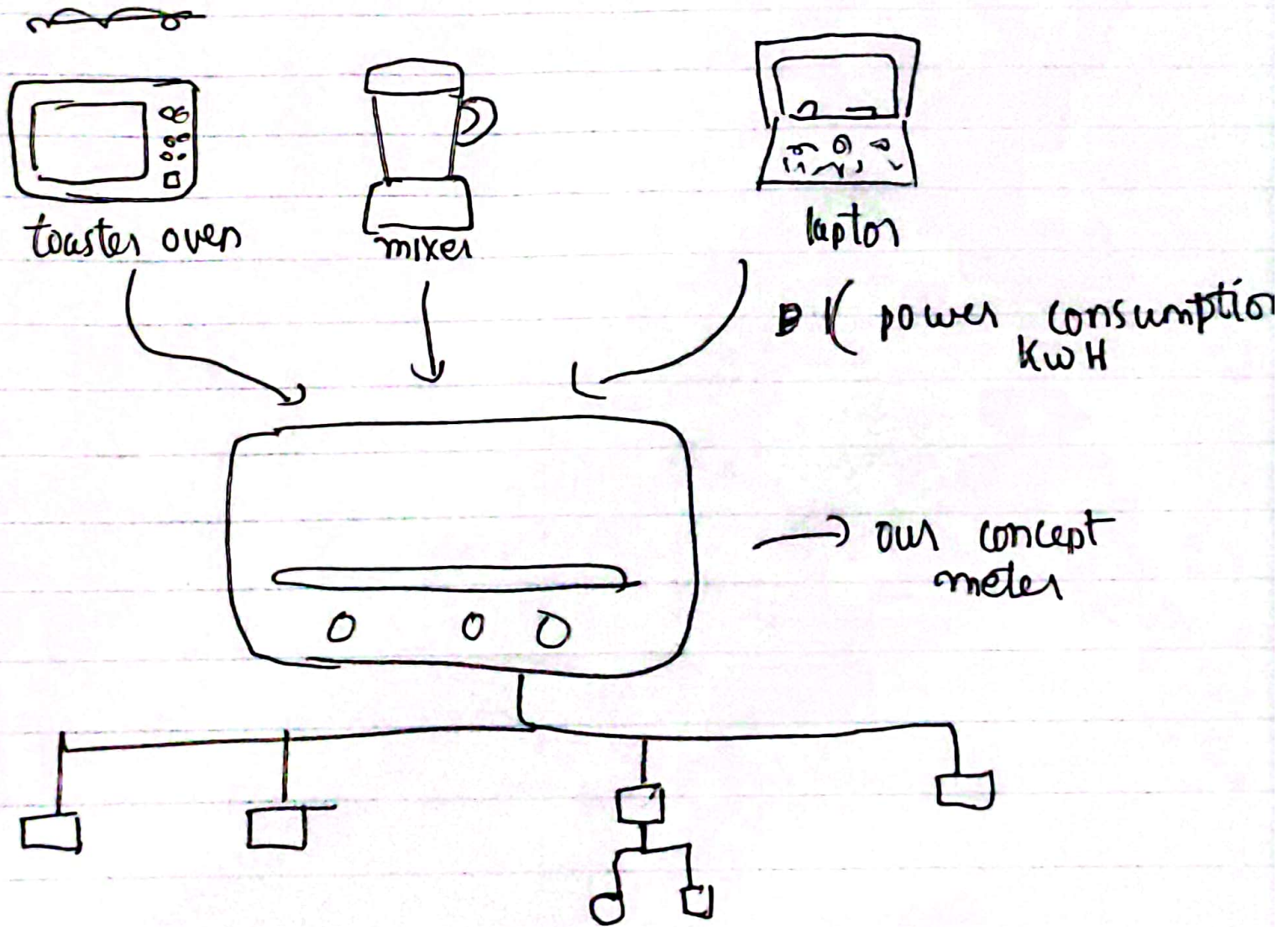

app

concept: devices that are connected to WIFI and are plugged into outlets

: PWR consumption could be measured using WIFI

TV

antenne

info

app

a information sent to app through wi-fi

Concept flowchart diagram

toaster oven

mixer

lapton

ϑ (power consumption
KwH

→ our concept
meter

power broken down into small parts
like current, voltage
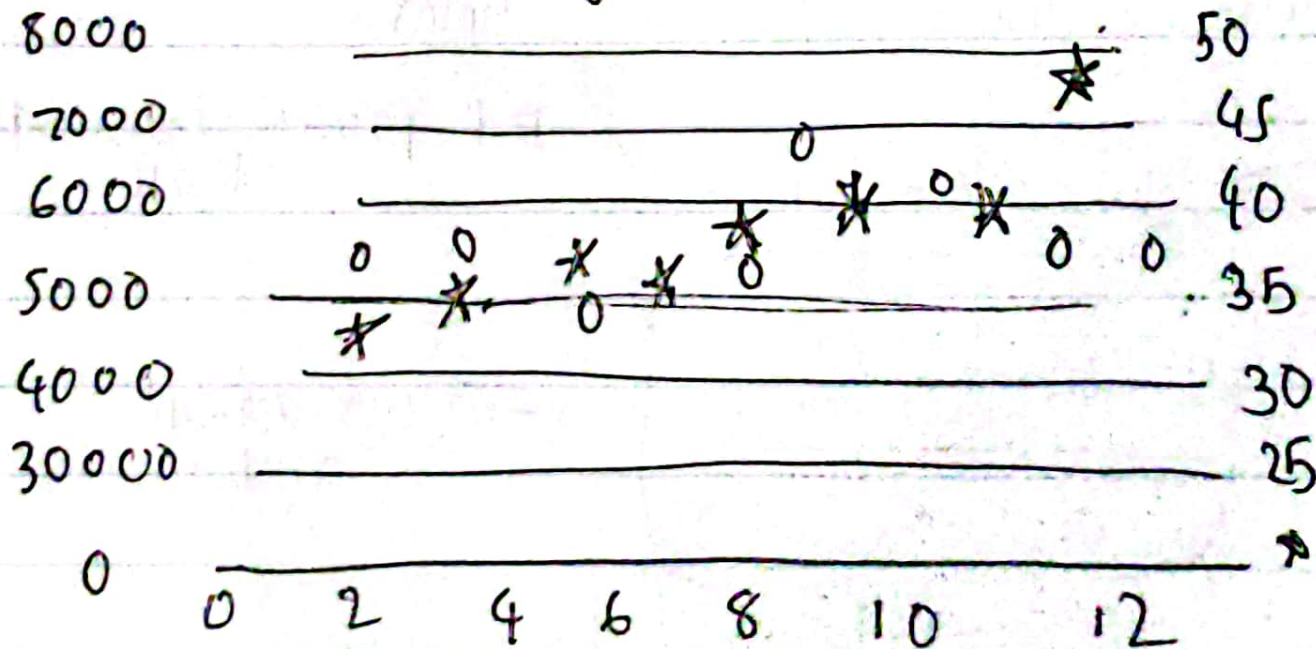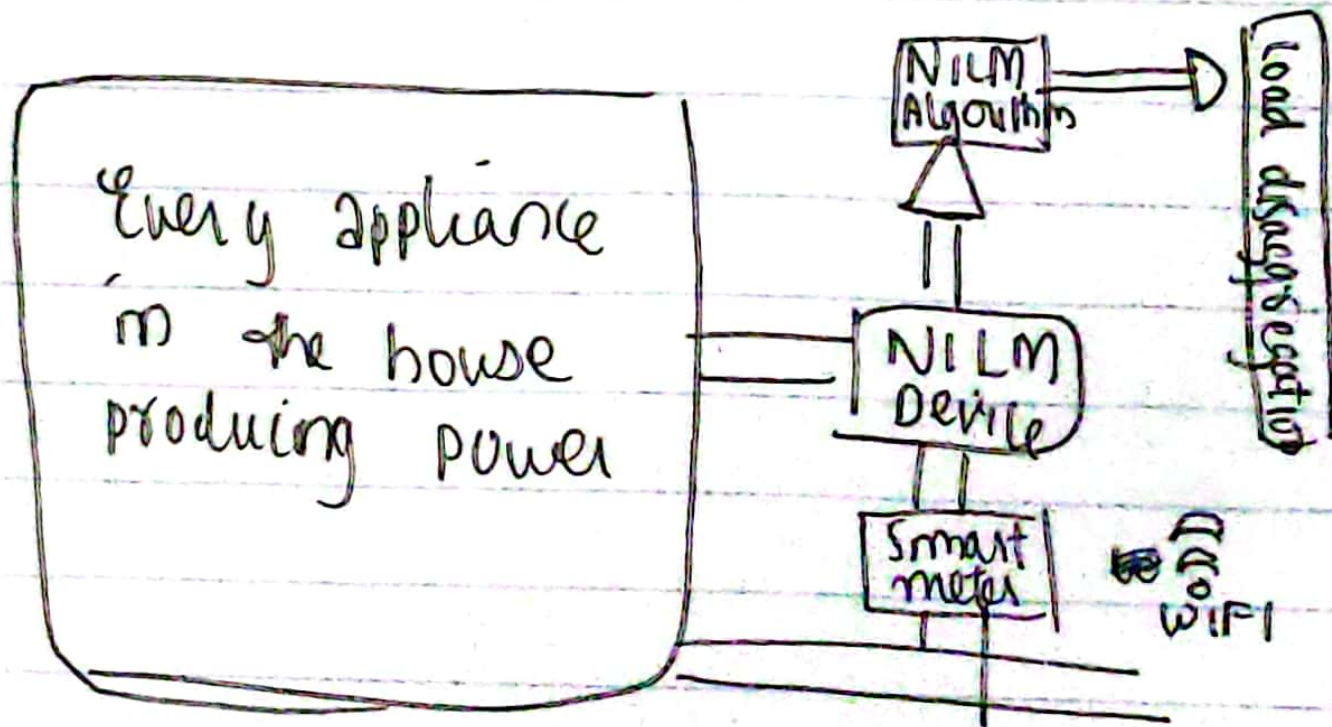
or scatter plot

A graph correlating power consumed & how bill it adds up ^would be helpful

ρ Electricity bill vs Power consumed

o Electricity bill   * power consumed

Tying all of them together

Every appliance in the house producing power

NILM Device

NILM Algorithm

load disaggregation

Smart meter

WiFi

Visualizing the data

```
┌──────────┐        ⬠                    ☁                    ⬡
│ hardware │     Energy              cloud storage        ┌────────┐
│  meter   │ →   disaggregation  →   of the disaggregt →  │ ▁▂▃ ⚙ │
│          │     using                values             │   ▽    │
└──────────┘     NILM                                     └────────┘
                                                         Data Visualising
                                                          using HMI
                                                           or App
```