States Identification :

i. **IDLE**:
  • No motion detected, waiting for a trigger.
  • LCD shows "System Ready".
ii. **TIMER_ON**:
  • Motion is detected within the range.
  • Timer starts counting.
  • LCD shows "Motion Detected!".
iii. **ALARM_ACTIVE**:
  • Alarm is activated (LED and buzzer on).
  • LCD shows "Alarm Activated".
  • Waits for a resolution (correct password, timeout resolution).
iv. **SLEEP**:
  • Sharp sensor is inactive.
  • LCD shows "Sensor Sleep".
  • Can be reactivated only by pressing the "Ativation" button.

Transitions :

  • **IDLE**　　　　　 → **TIMER_ON**:　　 On motion detection.
  • **IDLE**　　　　　 → **IDLE**:　　　　　 On no motion.
  • **TIMER_ON**　　 → **IDLE**:　　　　　 On no motion.
  • **TIMER_ON**　　 → **ALARM_ACTIV**: On timer timeout.
  • **TIMER_ON**　　 → **SLEEP**:　　　　 On correct password.
  • **ALARM_ACTIV** → **IDLE**:　　　　　 On timeout resolution.
  • **ALARM_ACTIV** → **SLEEP**:　　　　 On correct password.
  • **SLEEP**　　　　 → **IDLE**:　　　　　 On activation toggle.