

Automotive Door Control System Design (Dynamic Design)

Name :Abdullah Mohamed Abdullah

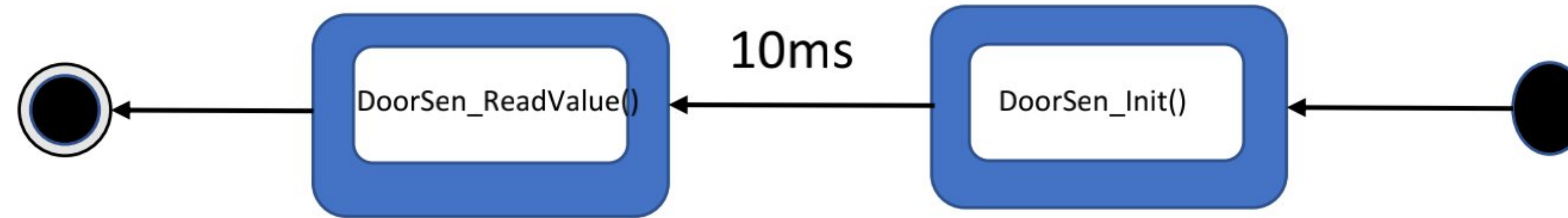
Email :mhamad50513@gmail.com

Dynamic Design

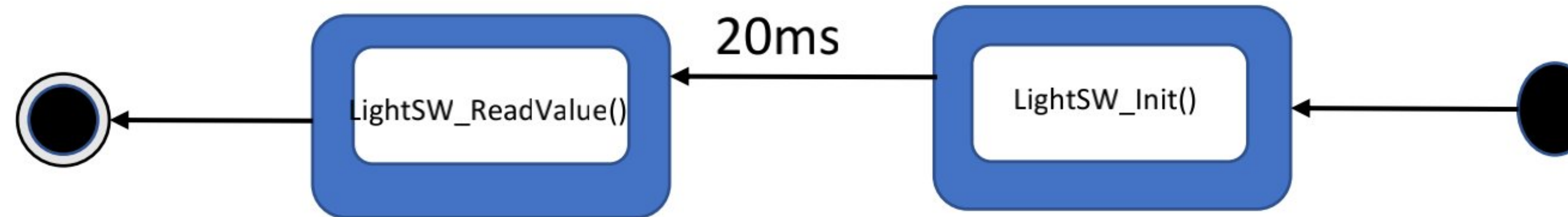
ECU 1

1- State Machine Diagram for each ECU1 Component

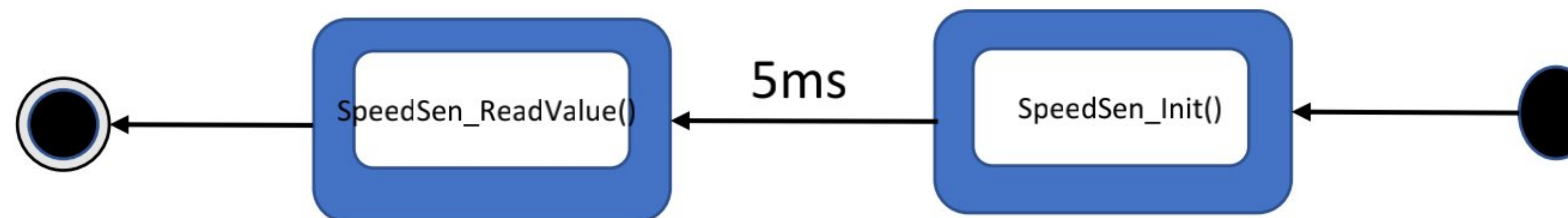
- Door Sensor



- Light Switch

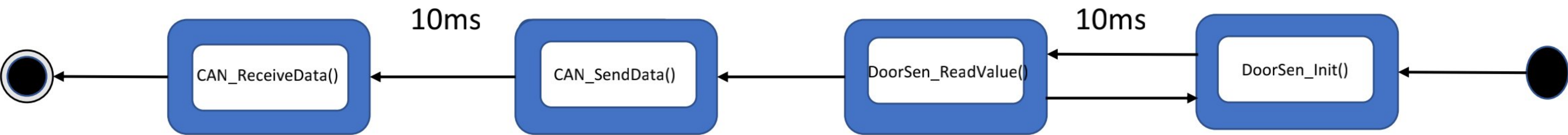


- Speed Sensor

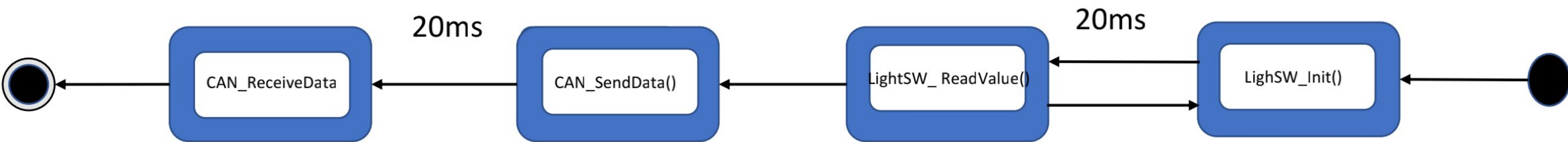


2- State Machine Diagram for ECU1 Operation

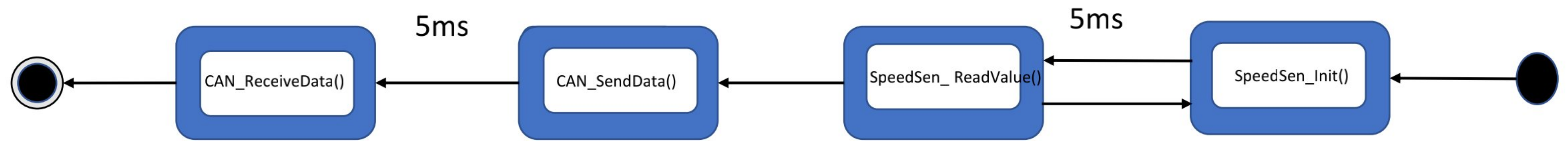
- Door Sensor



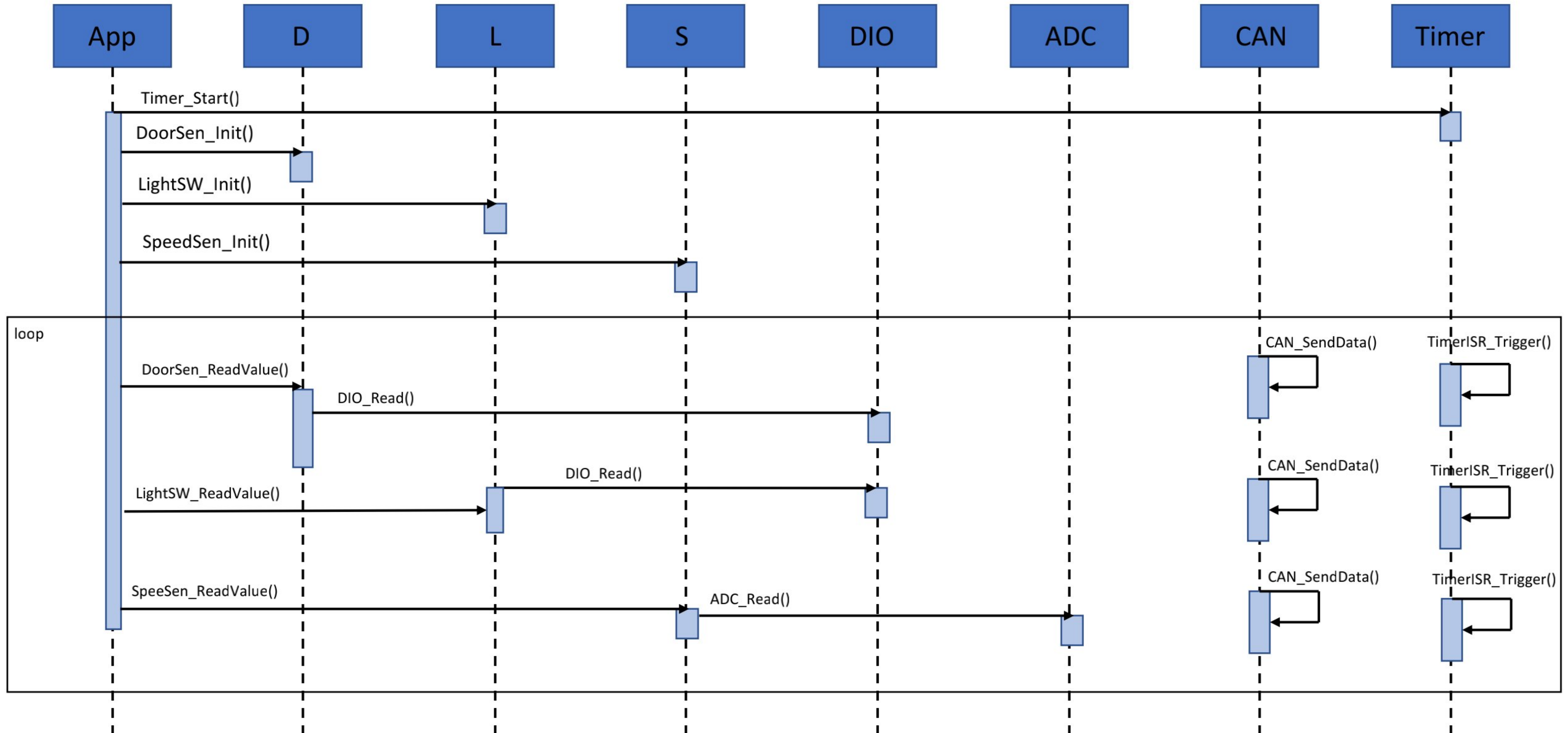
- Light Switch



- Speed Sensor



3- Sequence Diagram for CPU1



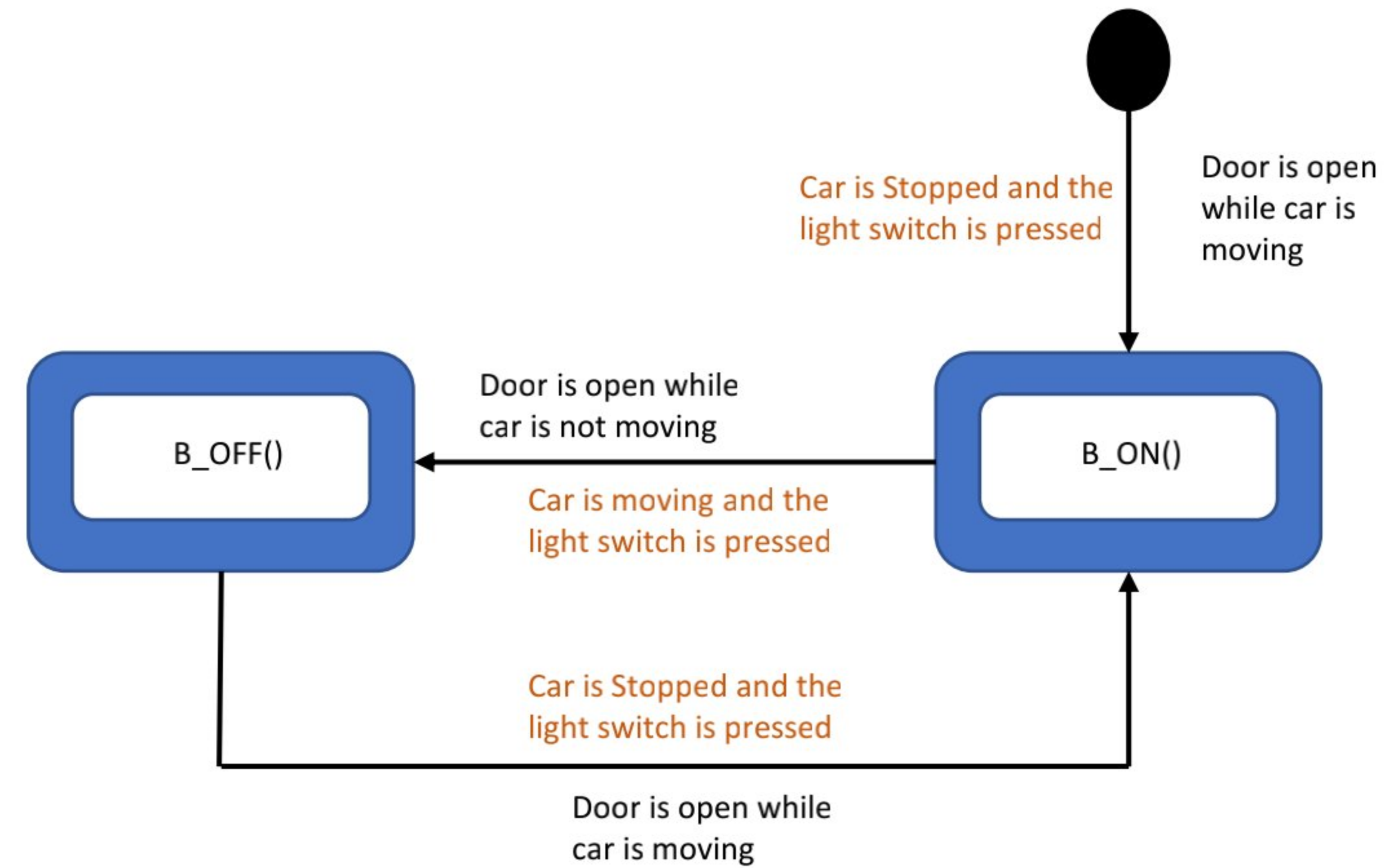
4- CPU load for CPU1

$$\begin{aligned}\text{CPU Utilization} &= 100 - \text{IDLE time} \\ &= 100 - 65 = 35\%\end{aligned}$$

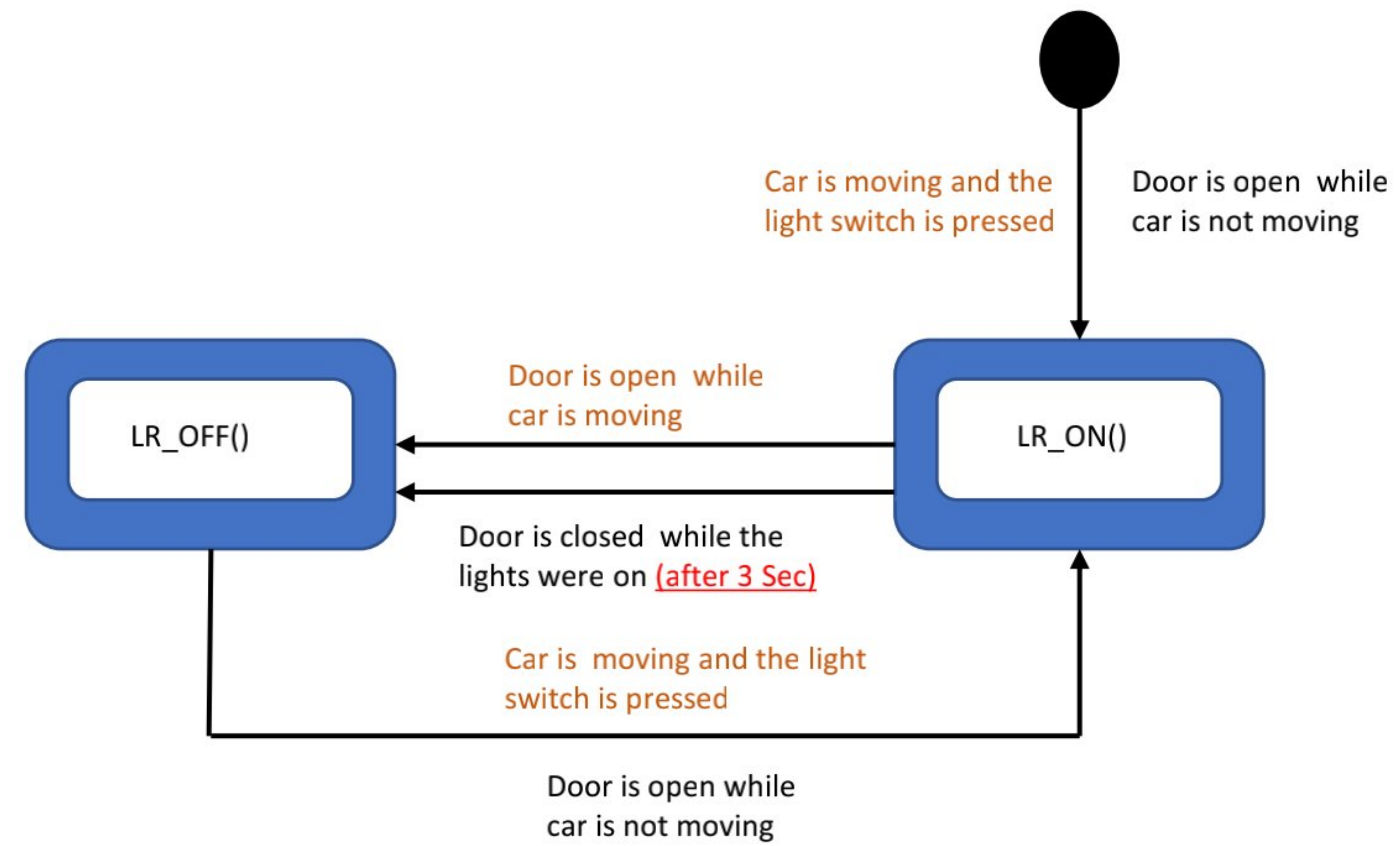
ECU 2

1- State Machine Diagram

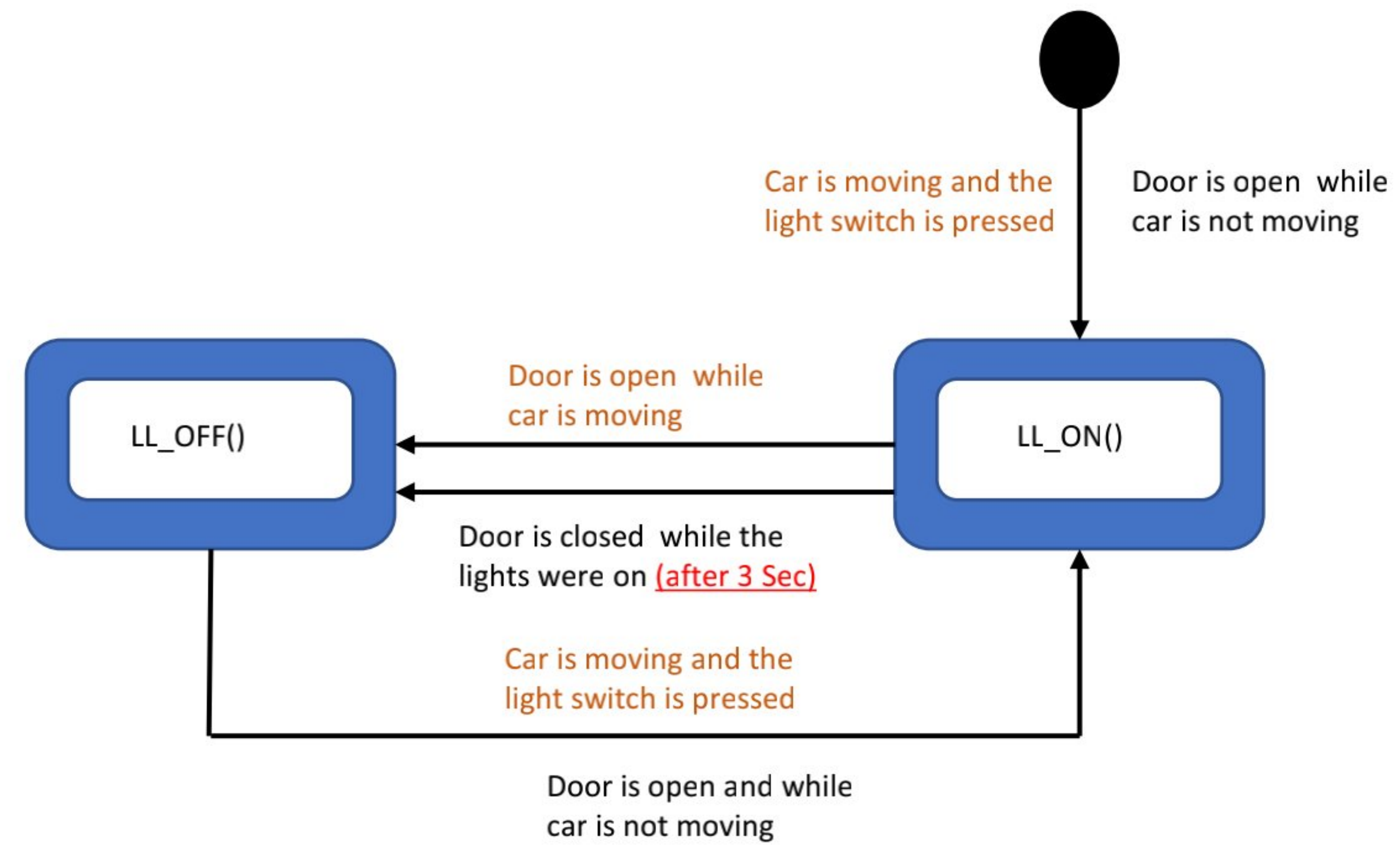
- Buzzer(B)



- Light Right (LR)



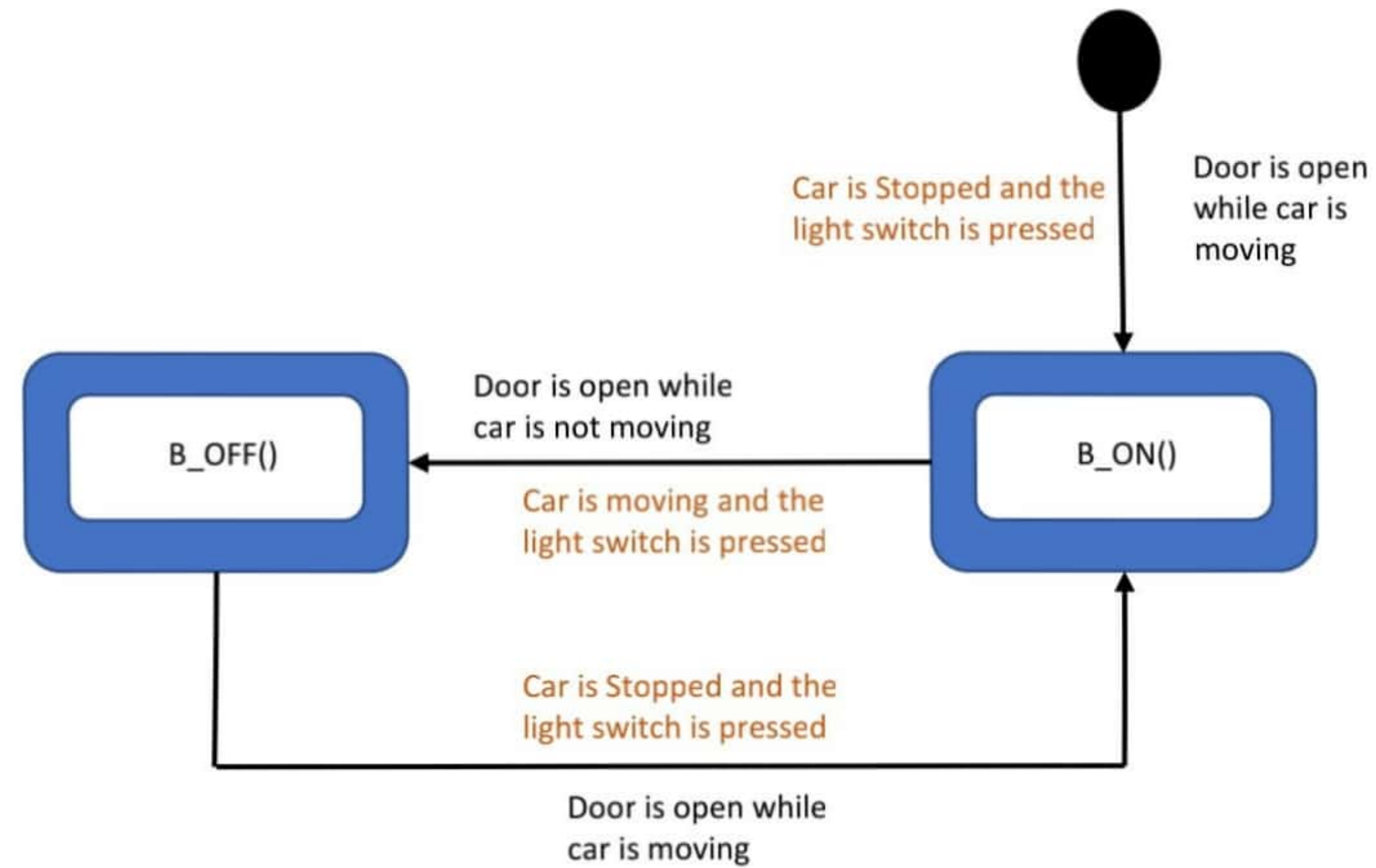
- Light Right (LL)



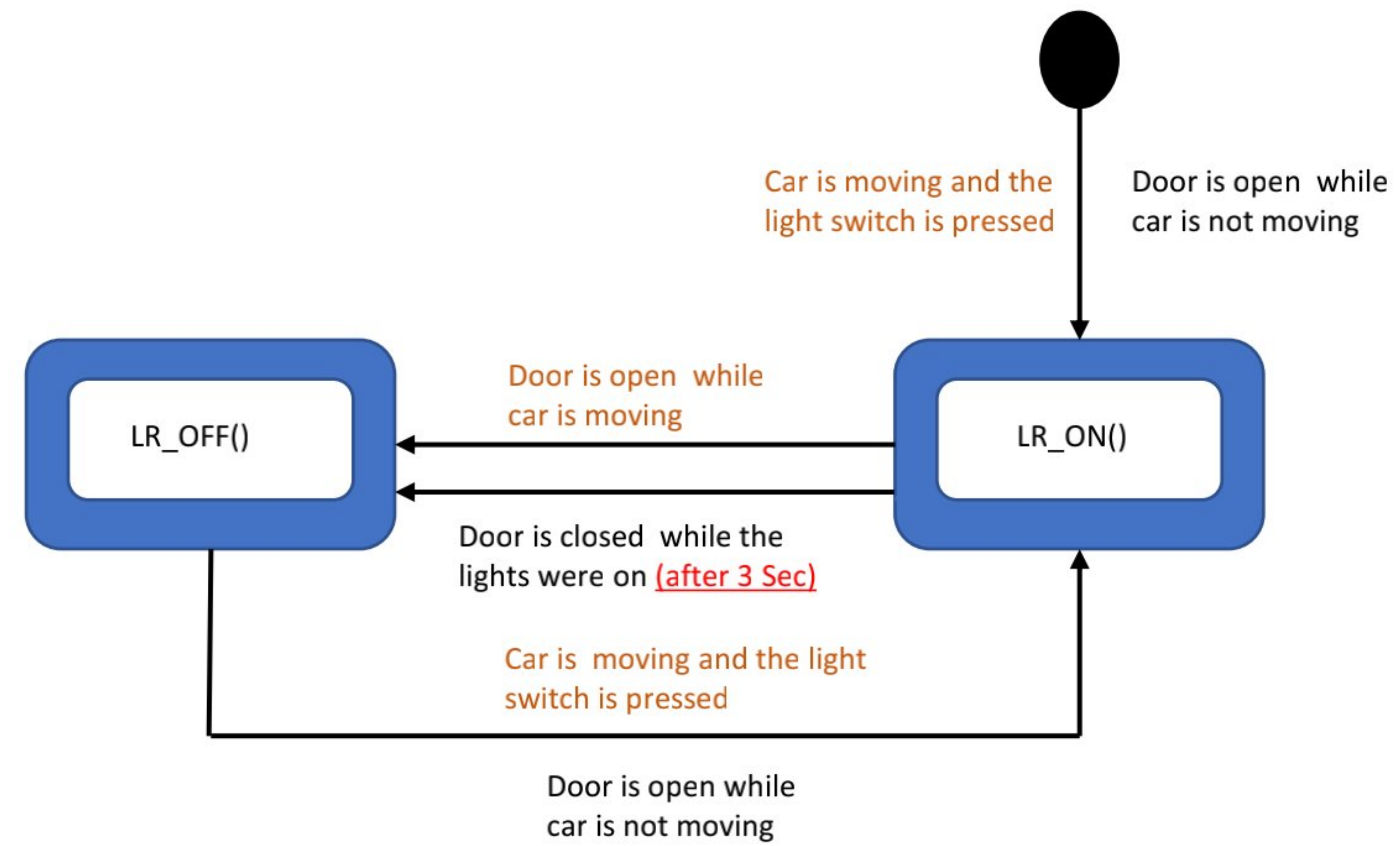
ECU 2

2. State Machine Diagram for Operations

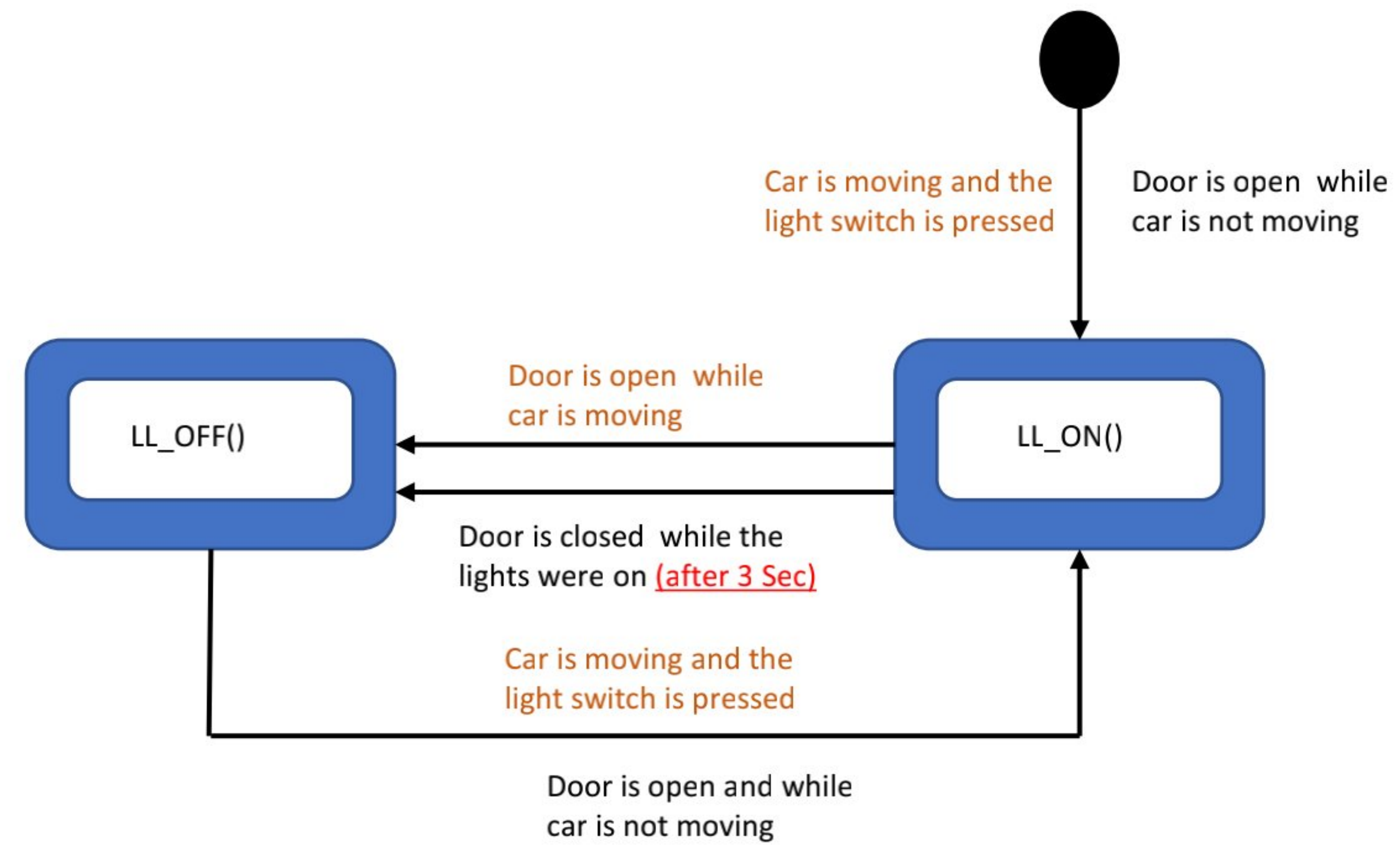
- Buzzer(B)



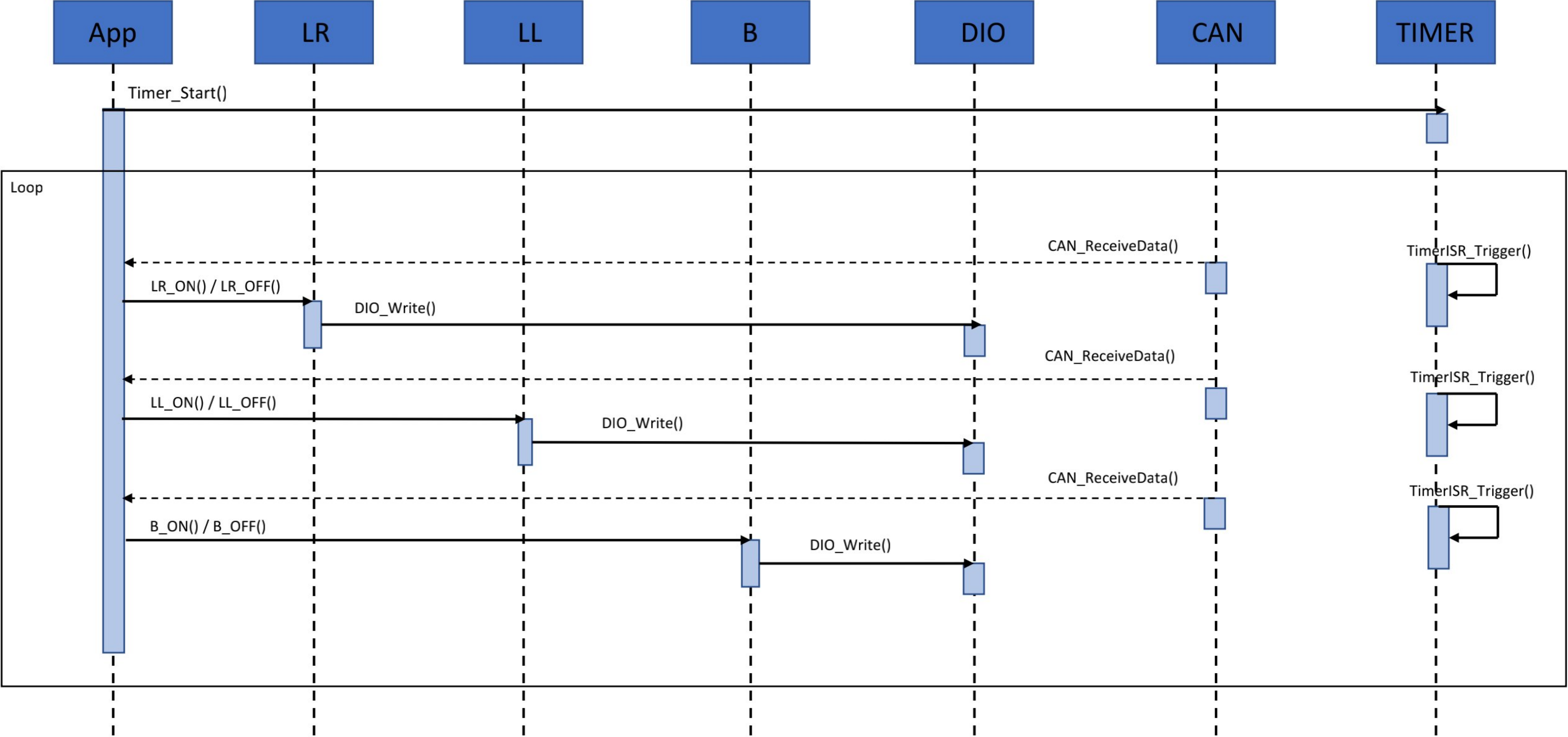
- Light Right (LR)



- Light Right (LL)



3- Sequence Diagram for CPU2



4- CPU load for CPU2

$$\begin{aligned}\text{CPU Utilization} &= 100 - \text{IDLE time} \\ &= 100 - 65 = 35\%\end{aligned}$$