Automotive door control system design

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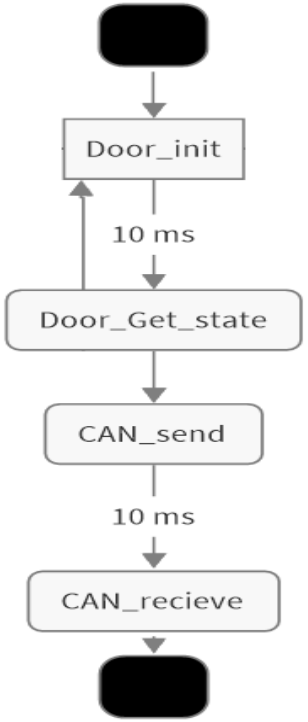
Dynamic Design

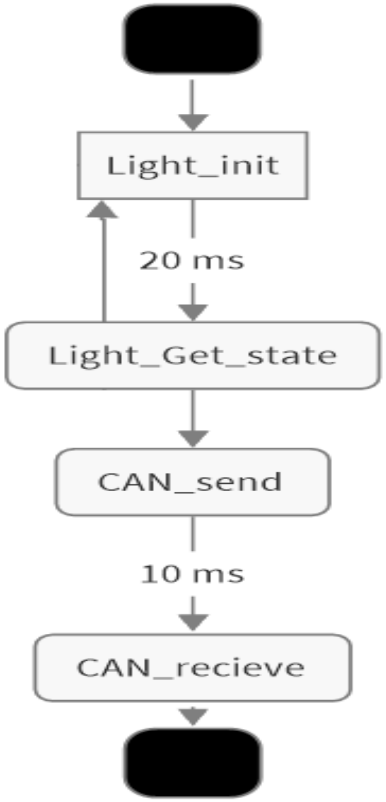
State Machine Diagram ECU 1

DOOR
Sensor



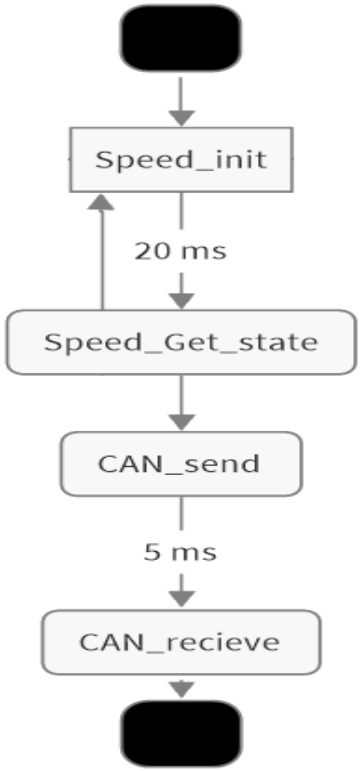
State Machine Diagram ECU 1

Light Switch



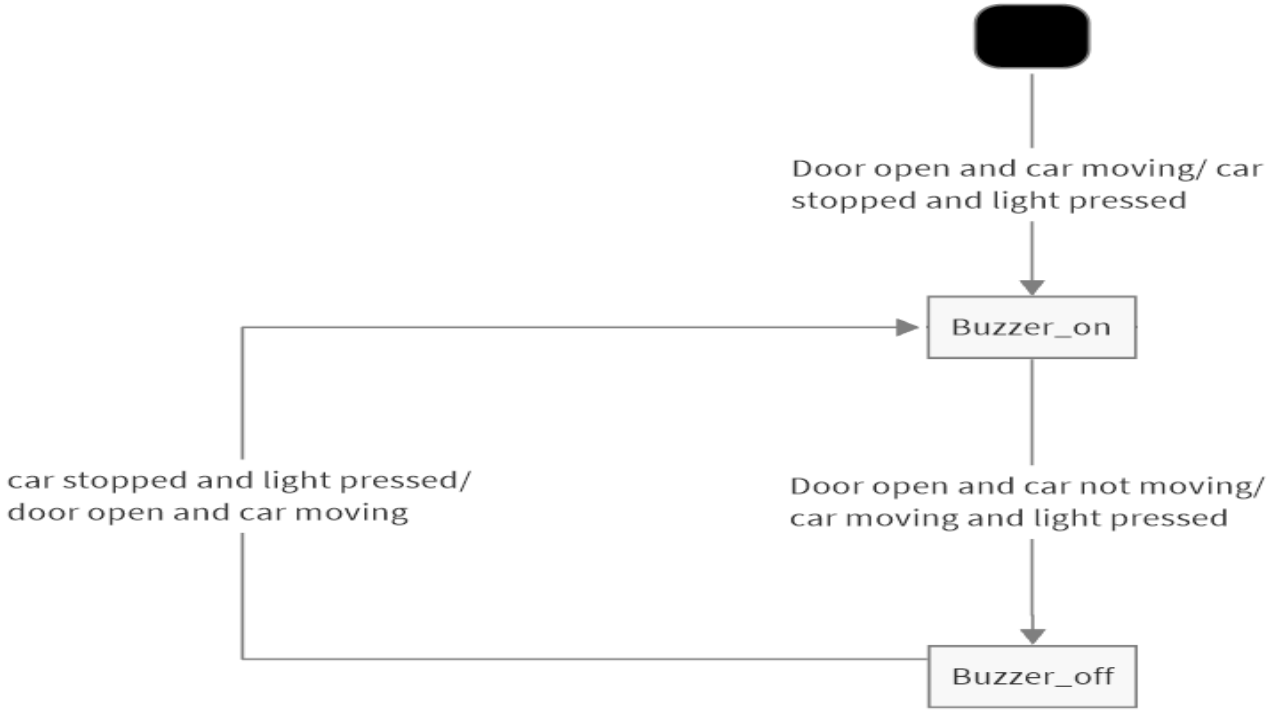
State Machine Diagram ECU 1

Speed Sensor



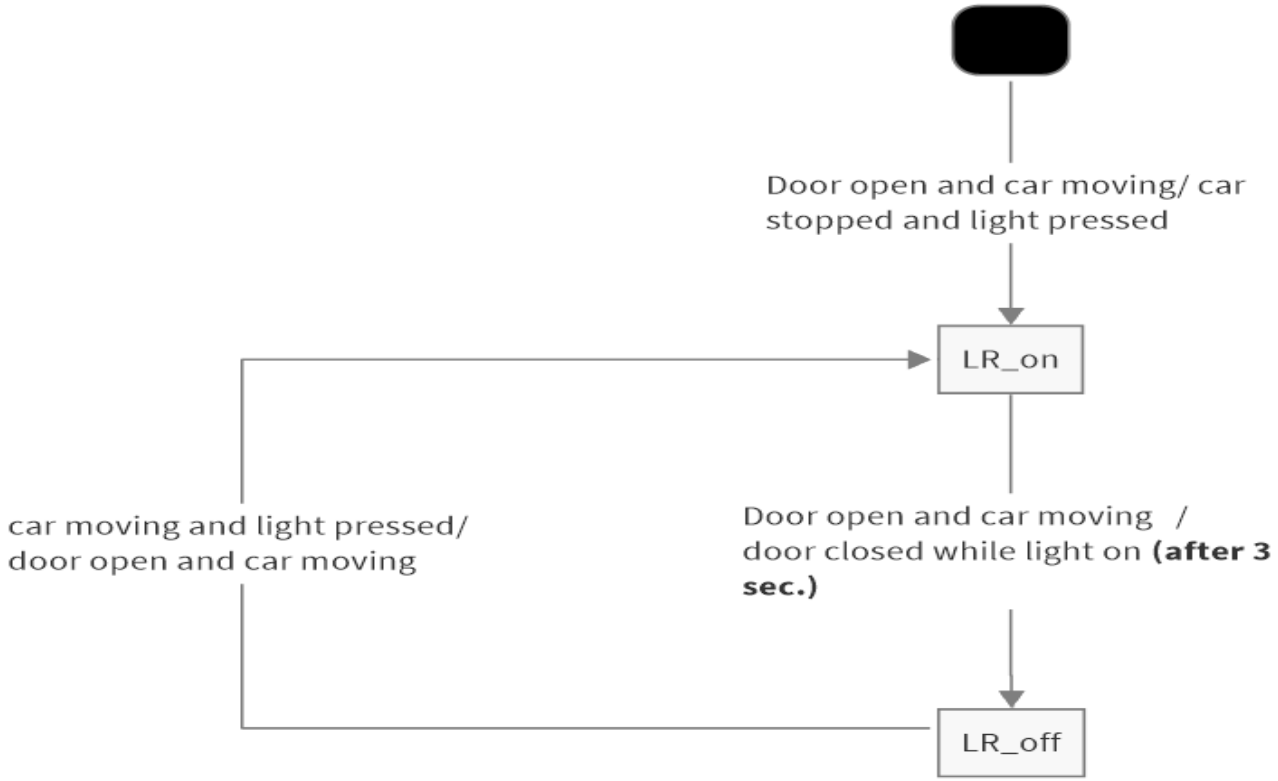
State Machine Diagram ECU 2

Buzzer (B)



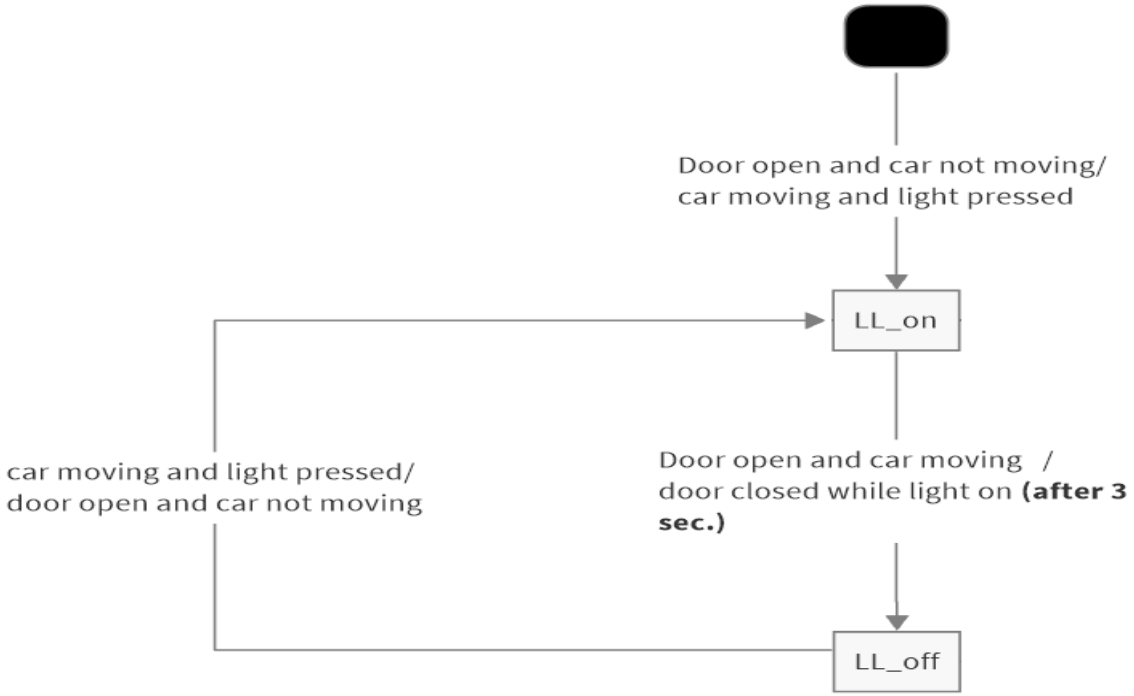
State Machine Diagram ECU 2

Light Right (LR)

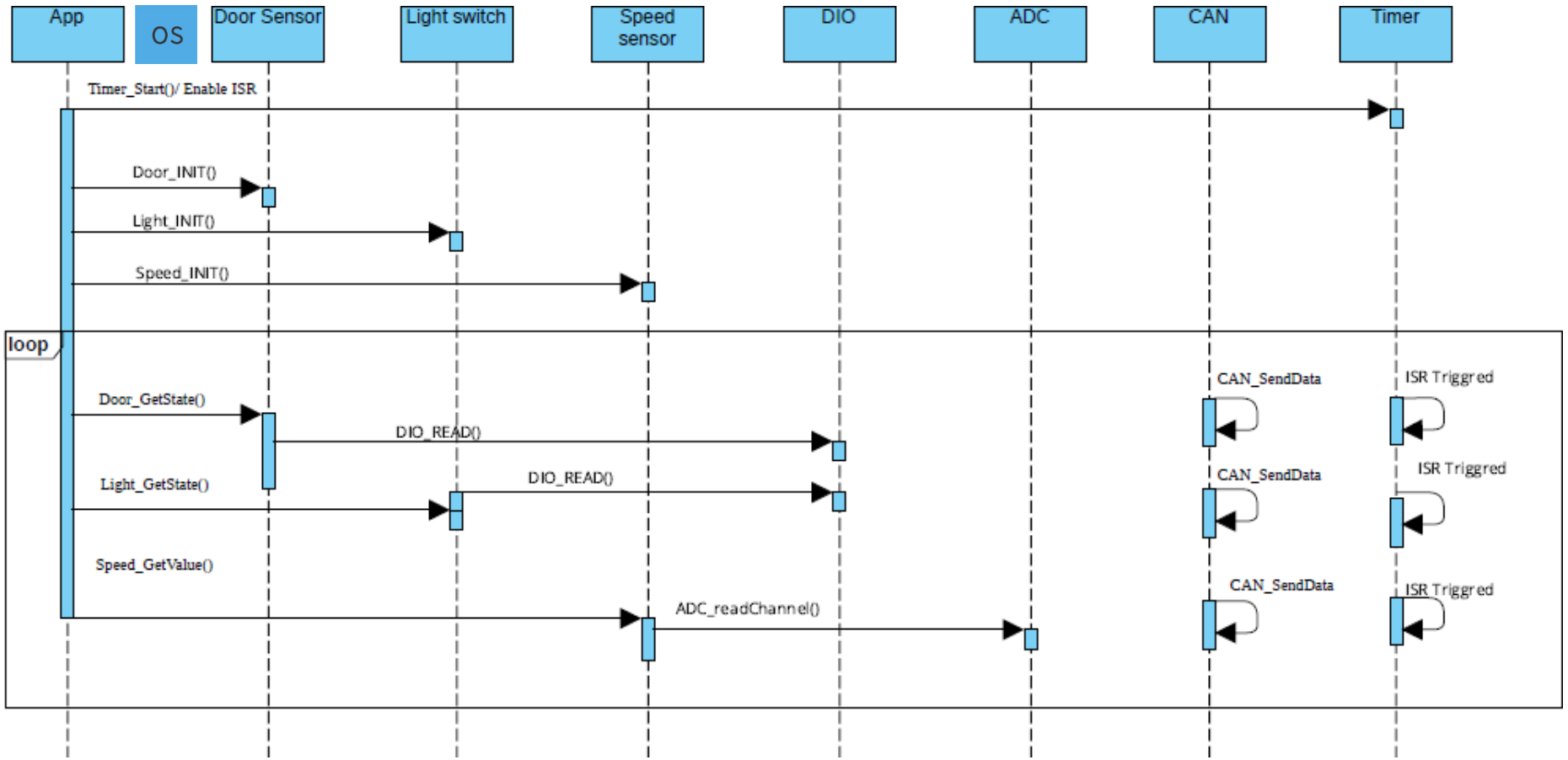


State Machine Diagram ECU 2

Light Left (LL)



Sequence Diagram ECU 1



ECU 1

$$\text{CPU Utilization} = 100 - IDLE\ time$$
$$= 100 - 65$$
$$= 35\%$$

id	Name	Task type	Abort on miss	Act. Date (ms)	Period (ms)	List of Act. dates (ms)	Deadline (ms)	WCET (ms)	Followed by	priority
1	TASK T1	Periodic	Yes	0	10	-	10	2		0
2	TASK T2	Periodic	Yes	0	20.0	-	20.0	2		0
3	TASK T3	Periodic	Yes	0	5.0	-	5.0	2		0

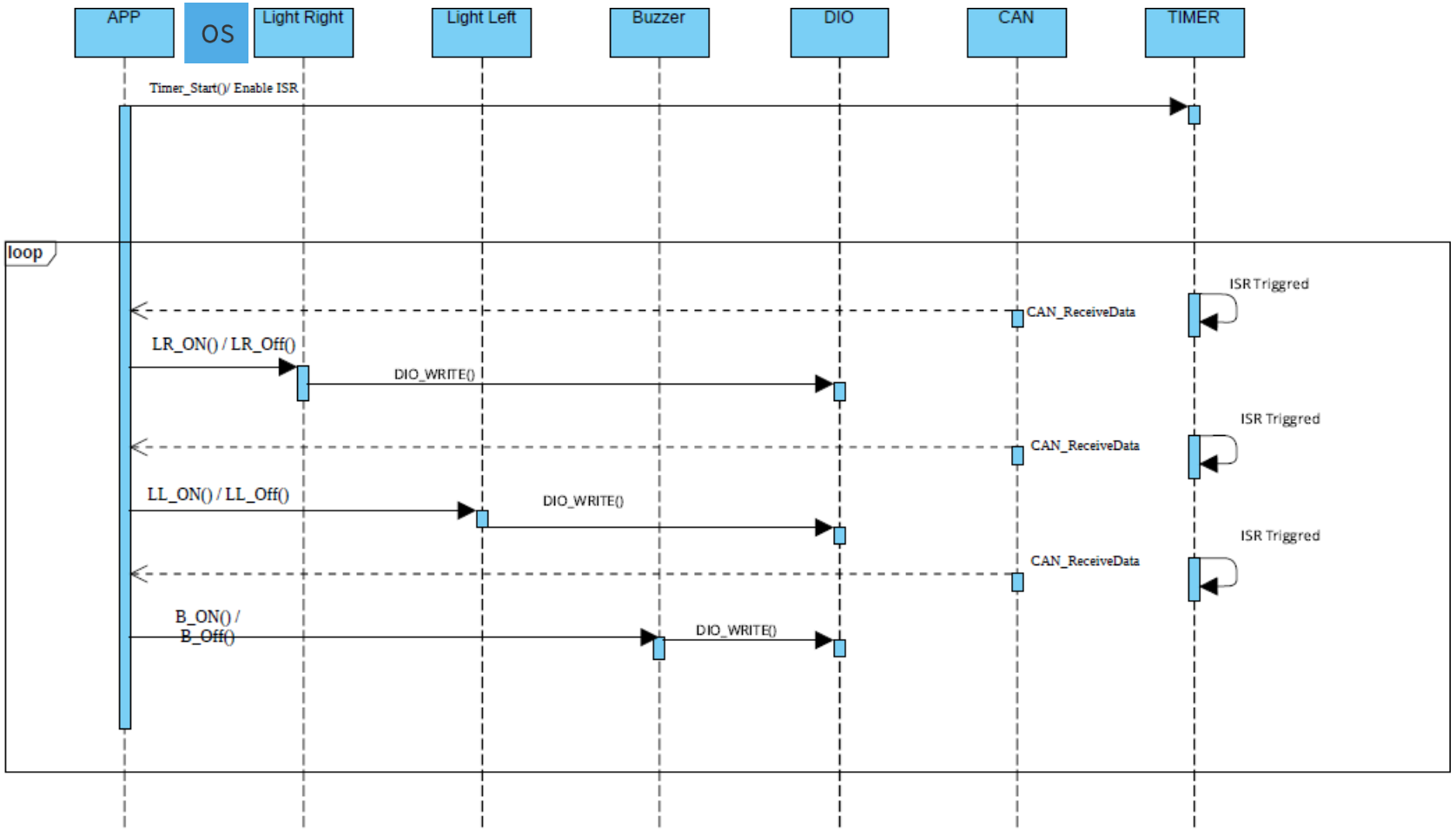
General | Logs | Tasks | Scheduler | Processors

Observation Window:

from 0.00 to 80.00 ms | Configure...

	Total load	Payload	System load
CPU 1	0.6500	0.6500	0.0000
Average	0.6500	0.6500	0.0000

Sequence Diagram ECU 2



ECU 2

$$\text{CPU Utilization} = 100 - IDLE\ time$$
$$= 100 - 65$$
$$= 35\%$$

id	Name	Task type	Abort on miss	Act. Date (ms)	Period (ms)	List of Act. dates (ms)	Deadline (ms)	WCET (ms)	Followed by	priority
1	TASK T1	Periodic	Yes	0	10	-	10	2		0
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