fortiss

Platooning Team

Group Status Presentation

June 27, 19

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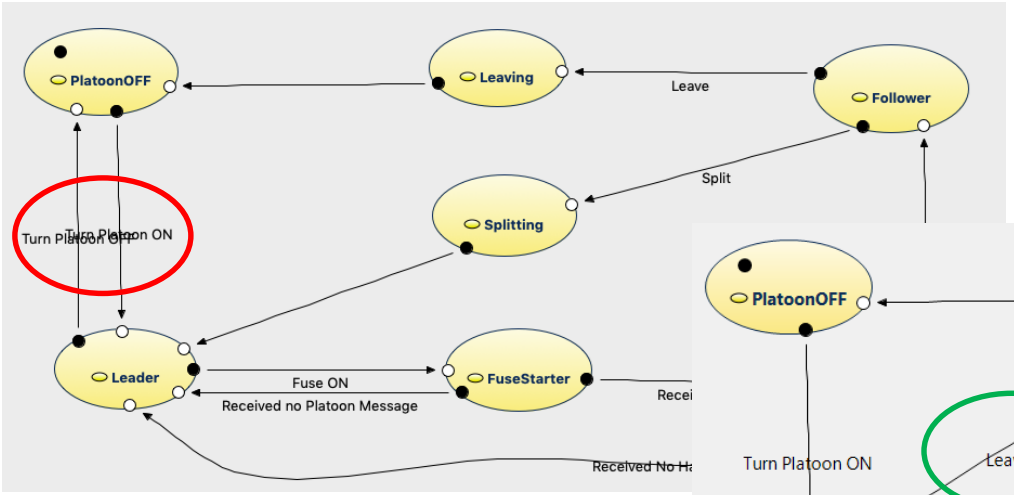
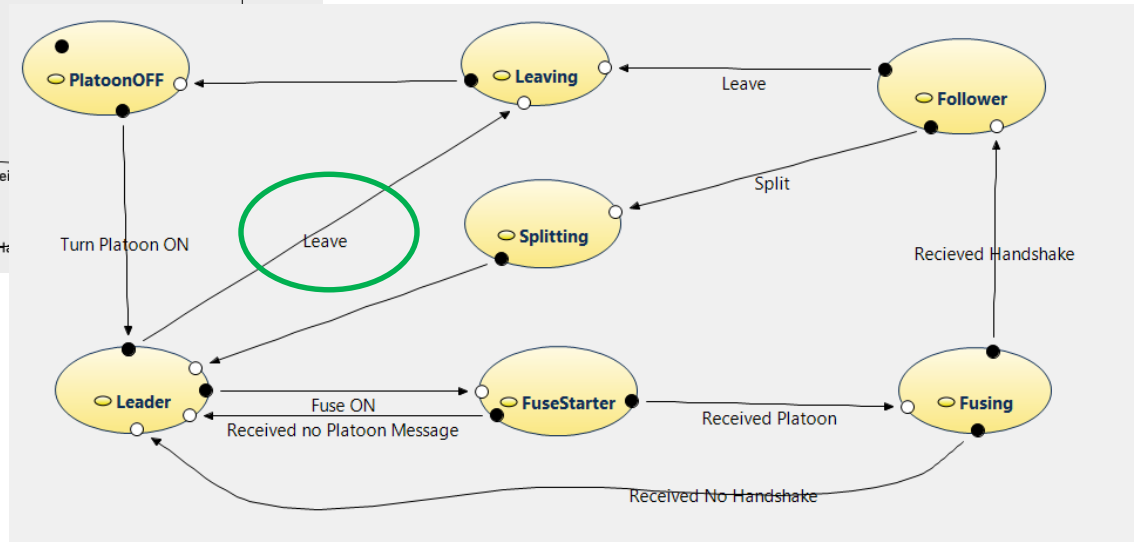
Status

- Added heartbeat message
- Implemented cases more than two cars
  - Fuse/Split/Leave
- Tested functionalities on simulator

Platoon State Component

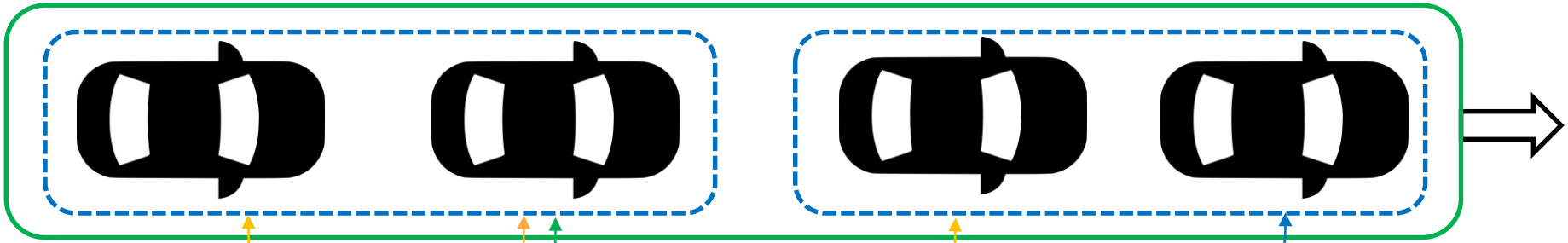
Updated transitions between states:





Fuse scencario

The third car wants to fuse:



5

State:
Follower

If (recieveMessage== newleader()) {
update platooninfo
}

1

State:
Leader --> Fusestarter

If (recieveMessage == platoon()) {
State:
Fusestarter→ Fusing
sendMessage: **fuse()**
}

3

If (recieveMessage == handshake()) {
State:
Fusing→ Follower
sendMessage:
handshake()
}

2

State:
Leader

If (recieveMessage == fuse()) {
sendMessage:
handshake()
}

Every 10 ticks:
sendMessage:
heartbeat()

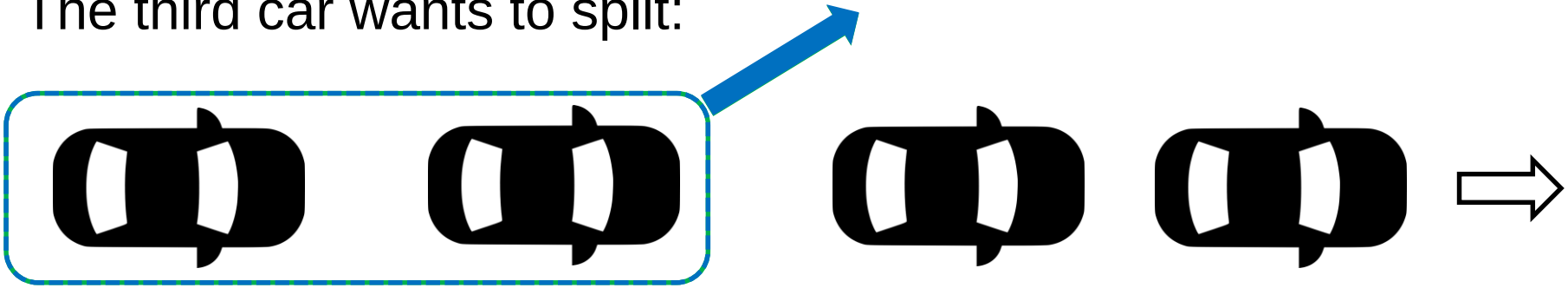
4

State:
Leader

If (recieveMessage == handshake()) {
sendMessage:
newleader()
}

Split scencario

The third car wants to split:



4

State:
Follower

If (recieveMessage== newleader()) {
update platooninfo
}

1

State:
Follower --> Splitting

If (state == splitting) {
sendMessage: **split()**
}

3

After 100 ticks:
State:
Splitting --> Leader
sendMessage:
newleader()

5

State:
Follower

If (recieveMessage== heartbeat()) {
update platooninfo
}

2

State:
Leader

If (recieveMessage == split()) {
update platooninfo
}

Every 10 ticks:
sendMessage:
heartbeat()

Leave scencario

The second car wants to leave:

3

State:
Follower

If (recieveMessage== heartbeat()) **{**
update platooninfo
}

1

State:
Follower --> Leaving

sendMessage:
leave()

4

After 100 ticks:
State:
Leaving --> PlatoonOFF

2

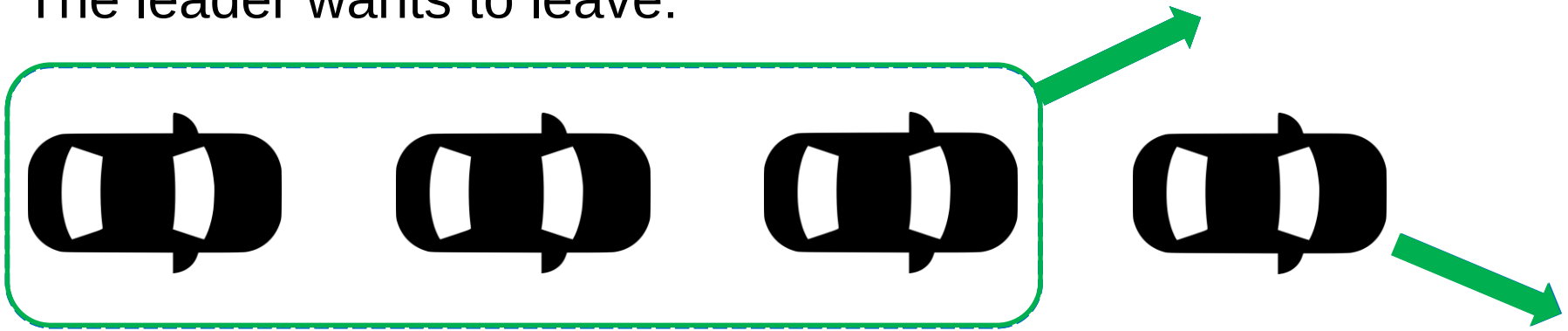
State:
Leader

If (recieveMessage == leave()) {
update platooninfo
}

Every 10 ticks:
sendMessage:
heartbeat()

Leave scencario

The leader wants to leave:



3

State:
Follower

If (recieveMessage== heartbeat()) **{**
update platooninfo
}

2

State:
Follower

If (recieveMessage== **leave() from leader**) **{**
sendMessage: **spilt()**
}

Every 10 ticks:
sendMessage:
heartbeat()

1

State:
Leader --> Leaving

sendMessage:
leave()

4

After 100 ticks:
State:
Leaving --> PlatoonOFF

Plan for next Week

- Deploy and test the functionalites on rover
- Test Lane keeping and ACC on track
- Support for emergency break

Issues: v2v message issue

Plan for Next Week

Issues:

- v2v issue

```
static inline uint8_t is_it_me_talking(uint16_t message_source) {
  uint8_t res = 0; //default to false
  pthread_mutex_lock(&(af3_v2v.uid_mutex));
  res = (message_source == af3_v2v.local_uid);
  printf("V2V output: function is_it_me_talking:  message_source == af3_v2v.local_uid evaluates to %hhu -- message source = %hu; af3_v2v.local_uid = %hu\n", res, message_source, af3_v2v.local_uid);
  pthread_mutex_unlock(&(af3_v2v.uid_mutex));
  return res;
}
```

```
V2V output: function is_it_me_talking:  message_source == af3_v2v.local_uid evaluates to 0 -- message source = 65535; af3_v2v.local_uid = 65535
V2V output: function is_it_me_talking:  message_source == af3_v2v.local_uid evaluates to 0 -- message source = 65535; af3_v2v.local_uid = 65535
V2V output: function is_it_me_talking:  message_source == af3_v2v.local_uid evaluates to 0 -- message source = 65535; af3_v2v.local_uid = 65535
V2V output: function is_it_me_talking:  message_source == af3_v2v.local_uid evaluates to 0 -- message source = 65535; af3_v2v.local_uid = 65535
```